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What Limits Intra-Household Insurance or the "Added Worker Effect"?

Abstract

The "Added Worker Effect" (AWE) theory posits that partners of the unemployed provide intrahousehold insurance by increasing their earnings. However, estimates of the AWE are small. Popular explanations include lacking need (e.g., due to generous unemployment benefits), capacity, or willingness to increase earnings, though these explanations are seldomly tested systematically. Using Swiss administrative data and difference-in-differences estimates we find an overall AWE among only non-working women. We find no systematic differences in AWEs between couples with differing need or capacity, but aspects related to willingness like marriage, long marital duration, and shared biological children are associated with higher AWEs. Men's overall slight reduction in earnings upon their partners' unemployment are driven by young, childless, cohabiting men. Overall, compared to unemployment insurance, in all studied subgroups, the AWE is a minimal source of insurance.

SER Keywords Labor Markets, Unemployment, Family, Household, Work, Europe

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1. Introduction

Theory argues that spouses should increase their employment and earnings when their partner loses their job (Mincer, 1962; Lundberg, 1985; Kohara, 2010). This intrahousehold insurance mechanism is called the "Added Worker Effect" (AWE) as an additional worker or work hours are added to the household labor force.

It is important to understand the extent of intra-household insurance and the factors influencing it. It is argued that welfare state programs such as unemployment insurance (UI) displace or "crowd out" private intra-household insurance (Schmieder and von Wachter, 2016; Krutova et al., 2018). If so, UI creates unnecessary public costs. However, if public insurance programs do not displace private insurance, UI retrenchment (Gordon, 2019) creates greater economic hardship.

The empirical literature has a wide range of estimates of the AWE. Those studies taking a quasi-experimental approach or looking within individuals find small effects on both the extensive and intensive margins ("intensive" meaning an increase in income among those already working and "extensive" meaning entry into employment) (Harkness and Evans, 2011; Hardoy and Schøne, 2014; Halla et al., 2020). These studies suggest that partner employment increases around 2-6 ppts (extensive reactions) and earnings increase around 2-5% (intensive reactions) (Baldini et al., 2018; Bredtmann et al., 2018; Bryan and Longhi, 2018a; Fackler and Weigt, 2019; Gong, 2011; Guner et al., 2020; Halla et al., 2020) with little consensus around whether intensive or extensive reactions are larger (Zhang 2014; Blundell et al. 2016; Benito and Saleheen 2013).

One potential reason for these low estimates is that there are heterogeneous reactions across the population, with some subgroups offering stronger AWEs, and potentially some individuals doing the opposite—reducing work when their partner is unemployed (due to labor market conditions, joint leisure, or their partner's job search). Further, understanding heterogeneity would elucidate the mechanisms suppressing the AWE. Cancelling subgroup effects (and thus average null effects) might also be one reason for the overwhelming absence of men in the AWE literature (Lundberg, 1985; Cammeraat et al., 2022), with the exceptions of Triebe (2015), finding strong male AWEs on the intensive margin, and Starr (2014), finding no male extensive AWEs.

The literature has identified several mechanisms which might inhibit the AWE—which we group as: *need*, *capacity*, and *willingness*. First, households might not *need* to rely on the AWE if they have other means, like wealth, UI, or child support. Second, partners might not have the *capacity* to increase their earnings if they already work full time or have low education or little work experience. Third, individuals might be un*willing*—related to financial incentives or norms.

There is, to date, no systematic analysis of heterogeneity in the AWE that explains the surprisingly low estimates. Qualitative work suggests that a preference for the status quo—an unwillingness to change roles—might be the driving factor behind low AWEs (Gush et al. 2015). In contrast, the quantitative empirical literature's examination of heterogeneity has focused on stronger AWEs among mothers (Cullen and Gruber, 2000; Halla et al., 2020; Mattingly and Smith, 2010; Mincer, 1962), which has to do with need (higher costs), willingness (a psychological or financial-legal commitment to the household), and capacity—particularly for younger children who create

strong demands on (women's) time and lead women to reduce their market work. The three mechanisms have seldom been explicitly or independently tested, leaving significant ambiguity about which factors inhibit the AWE.

We expand on the literature, measuring the AWE for *both* men and women, simultaneously testing the three mechanisms. We use a quasi-experimental approach similar to Halla et al. (2020) with difference-in-differences (DiD) estimates comparing couples experiencing an unemployment spell with those experiencing unemployment in the near future.

Combining multiple types of administrative data, we have long-term monthly information on unemployment benefits and income as well as information on marriages, separations, and births, allowing us to improve on the operationalizations of the three mechanisms. For need, we look at the household's past income, past income in combination with reliance on the unemployed partner's income, and UI entitlement rules. For capacity, we consider whether the individual is "under-earning" compared to past and predicted earnings and compare having a younger child to having older or no children. With respect to willingness, we examine marital status, marital duration, step- versus biological children, and whether wives keep their maiden names. These variables measure diverse aspects of willingness including norms or how individuals see their role in the household and legal and financial commitments. With population-level administrative data, we have the statistical power to *simultaneously* test the independent effect of each and to examine small groups such as non-working male partners.

2. The AWE and its limiting mechanisms

In this section we summarize the literature, reflecting on how *need* (the gap between income and consumption commitments), *capacity* (the ability to increase one's earnings through an increase in hours or wages), and *willingness* (one's readiness to increase work in response to a partner's unemployment spell) might constrain the AWE. For each we summarize the argument and empirical evidence.[1]

2.1 Need

The first mechanism is need. Counter-intuitively need might be highest among middle income families given that lower income households often have higher UI replacement rates and access to other social benefits, while high-income families, despite suffering larger absolute income losses and having wider gaps between income and consumption commitments because of UI caps, can realistically expect shorter unemployment spells and are likely to have other resources—key given preference to take even penalized early withdrawals from pension funds rather than increase work (Gush et al., 2015).

Many studies have used the presence of children to measure need (e.g., Mattingly and Smith 2010). Although children increase economic need, baseline costs are relatively low (Sarlo, 2013) and most are related to childcare and domestic goods (Apps and Rees, 2001), costs that can be covered by an unemployed parent (evidenced by the fact that unemployed women with young children transition to more care- and house-work (Gough and Killewald, 2011)). Studies have also used pre-unemployment income to measure need (Stephens, 2002; Halla et al., 2020), using linear assumptions and ignoring the possibility that middle -income households might face the most need.

The greatest mitigator of need during an unemployment spell is *unemployment insurance* (UI)—even with trends towards declining generosity (OECD, 2018). In the literature, there is widespread acknowledgement of UI's importance (Fackler and Weigt, 2019) and speculation that UI suppresses the AWE (Schmieder and von Wachter, 2016). Studies often interpret results in light of national UI systems (Parker and Skoufias 2004; Bredtmann et al. 2018; Halla et al. 2020), based on UI design aspects like means-testing (Bryan and Longhi, 2018a), or discuss the indirect effects of UI on the AWE via reemployment (Bingley and Walker, 2001). The understanding that UI likely suppresses the AWE also underlies the argument UI might be less generous when marriage is more prevalent (Haan and Prowse, 2017).

Despite the attention to UI, there is little *direct evidence*. Many acknowledge UI's role or attribute differences in the AWE across countries to UI, but few directly test the effects of UI generosity using quasi-experimental methods (Ehlert 2012; Schmieder and von Wachter 2016). One approach has been to look at inter-state variation in benefit levels (Cullen and Gruber, 2000) but results could be driven by correlated differences between states—a concern attenuated by surprisingly high estimates of AWE-UI substitutability. That said, evidence that generous UI suppresses family transfers (Edwards, 2019) and that familial support rises when disability and survivor insurance are insufficient or denied (Autor et al., 2016; Fadlon and Nielsen, 2019), suggest potential substitutability between UI and the AWE, though disability and death are more permanent income losses.

Based on this literature we propose our first hypothesis,

H1 Need: We expect a greater AWE when the household has had a lower income in the past, is more dependent on lost income, and when UI is less generous.

2.2 Capacity

The second factor likely inhibiting the AWE is partners' *capacity* to increase their earnings. Capacity can stem from working less than full-time or for lower than market wages. Capacity is particularly relevant for women given trends towards increasing employment and wages. When women do not work, capacity is low and not variable, with women unable to suddenly increase earnings. However, as women's labor attachment increases with women working part-time or in family-friendly jobs, capacity increases as does variability (Mankart and Oikonomou, 2016). Finally, when women universally work full-time at maximum market wages, capacity and variability in capacity, sinks. The ability to estimate capacity's impact on the AWE depends on the point in this evolution. In contrast, for men, it might be difficult to identify capacity effects given widespread full-time work at maximum market wages, though recent increases in leisure (neither paid nor household work) might indicate increasing capacity among younger men (Bianchi and Milkie, 2010).

There is awareness that capacity plays a role (Harkness and Evans, 2011; Kohara, 2010) with some suggesting female capacity might explain higher AWEs in poorer countries (Parker and Skoufias 2004) or pointing to declines in capacity due to the dual-earner model (Gorbachev, 2016). Empirical results hint at capacity effects with higher AWEs among young married women working part-time (Hardoy and Schøne, 2014) and among highly educated

women (Keldenich and Knabe, 2018). That said, measurement is inexact, using variables like women's education (Mincer, 1962), pre-marriage income relative to their partner, work experience before marriage, relative earnings (Halla et al., 2020), female labor market participation rates (Bredtmann et al., 2018), and whether the wife was in the labor market in the prior year (Spletzer, 1997). Although seldom interpreted as such, it is likely that the finding that women with *young* children have greater AWEs is related to capacity (Cullen and Gruber, 2000; Halla et al., 2020), given that women often reduce work upon childbirth, meaning initially they can increase hours at the same or higher wages, though as their work experience lags, capacity declines (Aisenbrey et al., 2009). Recent studies finding wage penalties for new fathers might suggest the same potential among young fathers (Cools and Strøm, 2016).

The inexact measurement of capacity can lead to misinterpretation. Given the positive correlation between partners' wages (Schwartz, 2010; Grotti and Scherer, 2016), as well as the fact that women's work depends negatively on husbands' wages (Verbakel and de Graaf, 2009), a greater AWE among women married to high-earning men can be capacity misinterpreted as need related to lost male income. Similarly, studies failing to measure women's higher capacity might misinterpret findings as related to gender norms.

Based on this literature we proposed our second hypothesis.

H2 Capacity: The higher the partner's capacity, as indicated by a gap between their current and potential earnings or by the presence of young compared to older children, the higher the AWE.

2.3 Willingness

The final mechanism is whether a partner is *willing* to increase their labor supply. Willingness is a broad category including both rational decisions (e.g., based on financial considerations) and more emotional or subjective motivations (e.g., perceptions of one's role in, or obligation to, the household).

The evidence on income pooling and labor supply suggest "willingness" likely influences the AWE. Households share finances depending on ideology and relative earnings (Bennett, 2013; Himmelweit et al., 2013), collective investments (Kulic and Sani, 2020), relationship duration (Pepin, 2019), and the institutionalization of partnerships (Kopp et al., 2010). There is less income pooling in families with stepchildren and among cohabiting versus married couples (Sweeney, 2010; Eickmeyer et al., 2019), though cohabiters share finances more as their joint investments grow (Präg et al., 2019). Having children is also associated with households pooling resources and considering the longer run in their financial bargaining (Kulic and Sani, 2020). Relationships also play a role in labor supply choices, though women's labor supply is more context-dependent than men's, reacting to marriage, spouses' earnings and hours, and children (Bianchi and Milkie, 2010; Killewald and García-Manglano, 2016). It is unclear whether this responsiveness is due to rational choice or more sociological explanations (Steiber and Haas, 2012).

The AWE literature has often interpreted results in light of willingness (Ehlert, 2016; Halla et al., 2020) with authors suggesting declining marriage and growing individualism weaken the AWE (Hardoy and Schøne, 2014;

Juhn and Potter, 2007), interpreting the low AWE among mothers of older children to be due to conservative ideology (Halla et al., 2020), and speculating that international differences might be due to norms (Ehlert, 2016). Yet, the theoretical arguments and the empirical basis are weak. Sometimes gender norms are framed to anticipate lower AWEs (Halla et al., 2020), but gender norms can also be framed as anticipating stronger AWEs, given women respond more to family context. Some studies cannot test willingness because they focus on homogenous subgroups such as married women who are out of the labor force or couples who have been married for a long time (Gorbachev, 2016; Cammeraat et al., 2022). Triebe (2015) took a first step towards understanding willingness examining cohabitation and gender, finding greater intensive AWEs among men and lower AWEs among cohabiting couples, potentially due to subjective orientation, shared wealth, joint tax treatment, and/or household-based entitlement eligibility. Perhaps the strongest evidence on willingness is qualitative work finding that couples prefer to not change roles (Gush et al., 2015).

Based on the literature we propose our third and final hypothesis:

H3 Willingness: Married couples, those with shared children, couples married for longer, and those with a greater commitment (indicated by adopting a partner's name) have a greater AWE.

3. Swiss context

Understanding estimated AWEs, the potential to estimate effects by the three mechanisms, and the generalizability of findings depend on the case we analyze: Switzerland.

With respect to need, Switzerland has low unemployment, high labor market participation, high earnings, low poverty, and high savings rates. In the period of this study, the administrative unemployment rate hovered around 3% with labor market participation around 88% for men and increasing for women from 76 to 80%. Adjusting for PPP, the GDP is the fifth highest in the world and wages are high with the average household earning about 7,500 CHF/month[2] (BFSa, 2021). Although there is no minimum wage, about half of the population is covered by general labor contracts, which keep wages above 20 CHF/hour (Oesch and Rieger, 2006). The risk-of- poverty rate (less than 60% of median income) is 15.5, slightly below the European average (BFSb, 2021 Eurostat). The savings rate of 19% is the highest in Europe, though much of these savings are in mandatory occupational pensions which cannot be accessed unless purchasing a first home, starting a business or until nearing retirement.

The Swiss unemployment insurance system is generous (OECD, 2018). Those with over 12 months of contributions in the last 24 months are eligible, including voluntary job losses (with a waiting period).[3] Individuals earning less than a minimum (currently 3,797 CHF/mo.) have a replacement level of 80% with or without dependents, compared to 70% for those over that threshold without dependents (80% with) — relatively high in international comparison (OECD, 2019). Income over 148,200 CHF is not insured. The standard benefit for prime age workers (23-53) with full contributions (18+ months) is 1.5 years compared to 1 year for those with 12 to 17 months contributions. When UI benefits run out, the unemployed can apply for social assistance, about 2,000 CHF for a couple with two children (Stutz et al., 2019), *excluding* housing and health insurance.

With respect to capacity, although women's education has outpaced men's, Swiss couples generally divide market work such that men work full-time and women part-time (Csonka and Mosimann, 2017) (60% of women work part-time compared to 18% of men, or 82% versus 8% among those with children) (BFSd, 2021), with two-thirds of household earnings coming from men (BFS, 2018). Swiss women have high work capacity with significant variability across the population, making it likely to detect capacity effects. For men the situation is the opposite, with consistent high rates of labor market participation and hours anticipating lower male AWEs and difficulty measuring capacity's impact. Widespread full male employment also means capacity might proxy unobserved characteristics like poor health.

Switzerland should not have particularly higher or lower AWEs due to mean demographic characteristics, as marriage, divorce, cohabitation, and fertility are around the European averages (first time male marriage rate of .52, crude divorce rate of 2.9, cohabitation rate of 14.1, and fertility rate of 1.46) (Eurostat, 2018). With substantial variability across the population these effects should be detectable.

In sum, Switzerland might offer a lower bound estimate of need while capacity might offer an upper bound estimate. In contrast, measures related to willingness are likely generalizable.

4. Methods

4.1 Data

We draw on full population Swiss administrative data merged using individual social security identification numbers. We use population registers (2012-2015) (BFS, 2018) to identify couples, marital status, household size, children, citizenship, and residential mobility, UI registers (2012-2018) for information on the unemployed and unemployment spells (Federal Council, 2006), social security data (2002-2016) for incomes (Central Compensation Office, 2018), and social assistance statistics (2005-2016) (BFS, 2017).

4.2 Design

We measure the AWE with the change in partners' (referred to as *partner* throughout) employment and income caused by income shocks from the involuntary unemployment of their partner (referred to as *unemployed*). We restrict our sample to unemployed who a) registered for unemployment benefits between June 2012 and March 2015 and b) were not sanctioned (excluding voluntary quits).[4] Excluding those with sanctions reduces the sample by 38% but reduces the possibility of endogenous reactions (see Cammeraat et al., 2022 for a similar study design) that might stem from reverse causality (e.g., quits because the partner has a new job in another region) or unobserved factors affecting both partners (e.g., a sick child). This design offers greater generalizability than those studies using the narrower definition of those unemployed due to plant closures or mass lay-offs (Hardoy and Schøne, 2014; Triebe, 2015; Halla et al., 2020) and results are not sensitive to varying selection criterion.[5]

We exclude partners living with the unemployed for less than six months after the start of unemployment[6] and include only opposite sex two-adult households with an age difference below 15 years. We also select based on the unemployed person's and the partner's ages (25-53 and 18-58 respectively) to exclude older unemployed who have longer maximum UI benefit durations[7] and partners who can access early retirement or occupational pensions.

To account for changes in employment or income that would have occurred irrespective of unemployment, we use an individual-level difference-in-differences (DID) design (Cammeraat et al., 2022). We assess the within-person change in employment and income from the year before unemployment to the first and second year after the start of the unemployment spell. We compare this to a control group of those with partners having an unemployment spell *in the three years after our study period* (June 2015 to May 2018) (see Halla et al. (2020) for a similar design). For those in the control group we set the date of the unemployment start three years back, such that the average *fictious* start date in the control group equals the average start date in the treated group. The control group is thus younger, but similar in other labor market and household characteristics (Tables A1.2 and A1.3).

4.3 Measures

Outcomes

We measure the AWE with reactions at the extensive margin (employment) as well as at the intensive margin (monthly income). On the extensive margin, we focus on partners that had an income of zero in month 7 prior to unemployment (extensive sample) and assess employment in the first and second years after unemployment. We use the seventh month as many do not immediately register for UI. Intensive reactions are measured by selecting those partners with a positive income in month 7 prior to unemployment (intensive sample) and assess changes in employment income from before to the first and second year after unemployment. For both extensive and intensive outcomes, we consider employment income from dependent and self-employment.[8] To put the AWE into perspective, we interpret the ratio between gains in income and household income losses due to unemployment as the "insurance value" of the AWE (see Appendix 2 for the measure of income losses or "treatment intensity", i.e., the effect of unemployment on household income excluding the partners' income).

Moderators

To examine heterogeneity and mechanisms, we assess differences in the AWE between subgroups with varying levels of variables measuring need, capacity, and willingness.

There are three measures of *need*. First, we use pre-unemployment household income tercile,[9] which includes both partners' employment and social insurance income prior to unemployment, transformed into equivalized household income dividing it by the square root of the number of household members. This should capture household resources. The second measure examines relative income loss within each income tercile, identifying households where the unemployed was the primary earner (earning more than 2/3 of household income) versus an equal or secondary earner. Finally, we compare a "short contribution group" with one year of benefit eligibility to a "long contribution group" with 1.5 years of eligibility. The short group should have greater need in the second year of unemployment, as benefits run out.[10]

C*apacity* is also defined using three measures. First, we consider the difference between the average earnings prior to unemployment and the highest income in the 10 years before,[11] a measure with a high value for those reducing work hours or switching to more family-friendly jobs and a value of null if earnings equal or exceed past earnings.[12] Second, we use the difference between the partner's predicted income 12 to 7 months before their partner's unemployment and their actual income in the same period. The prediction is estimated using the control sample and includes both partners' average income in the two years before the reference period (12 to 7 months before unemployment), as well as sociodemographic information on the couple and unemployed person. This identifies those who are "under-earning" just before their partner's job loss. Finally, we present estimates related to children under capacity. As covered in the theory section, children increase need and willingness, but the comparison between young and older children should represent capacity.

We measure *willingness* using four measures. First, couples are defined as married if the partners are married to each other and in the same household versus cohabiting if living in the same household, but not married to each other.[13] Marriage represents an emotional commitment to a partnership, a legal binding of economic interests, and incentives related to the higher taxation rate of a secondary earner. Second, within married couples, we use marital duration. As a marriage endures, couples have increasingly more joint assets and a greater emotional commitment. Third, among married couples, we consider whether the wife took her husband's last name[14] an indicator of commitment (Kelley, 2023). Finally, among couples with children, we distinguish between shared biological versus stepchildren.

Control variables

Table A1.1 gives an overview of all control variables.

4.4 Estimation

The analysis focuses on how the AWE differs by the moderator variables.[15] OLS models predict annually aggregated, within-couple first differenced outcome variables ($Outcome_{change_i}$). Before estimation, the distributions of moderator and control variables in the control group are balanced to that in the treated group using entropy balancing (Hainmueller, 2012; Cefalu et al., 2020). The base model includes the treatment indicator T, moderator variables M, control variables C, interactions between the treatment indicator and moderator variables $X_T * X_M$ as well as triple interaction terms $X_T * X_M * X_G$ so interactions between the treatment and our moderator variables can differ by gender. Moderator variables are included simultaneously, measuring the independent effect of each on the AWE.[16]

$$Outcome_{change_i} = \beta_0 + X_T * \beta_T + X_M * \beta_M + X_C * \beta_C + X_T * X_M * \beta_{TM} + X_T * X_M * X_G * \beta_{TMG} + \epsilon \quad (1)$$

The AWE is measured as the predicted average marginal effect of the treatment. To examine categorical moderators, the predicted AWE is presented for each category. For continuous moderators, the AWE is predicted at low (10th percentile) versus high (90th percentile) values with statistical significance assessed using a Wald

(Chow, 1960) test of the differences in the average marginal effects of the treatment indicator comparing the predicted AWE by category or at low versus high values.[17]

Analyses of marital duration, marital name change, and unemployment insurance use different models and samples. Models on marital duration and name change include only the married. The analysis of UI benefits is restricted to long-term unemployed (at least 12 months of UI benefits) since differences in benefit entitlement occur in the second year (1 versus 1.5 years). The model examining UI also uses annually aggregated, within-couple first differenced outcomes, but observations for the first and second years are pooled. The model then has the same form as (1), but includes a triple interaction term for the year Y after unemployment $X_T * X_M * X_Y$ – allowing the AWE to differ between year 1 and 2 and between those with short and long contributions - and a quadruple interaction term $X_T * X_M * X_Y * X_G$ accounting for gender differences in this triple interaction.[18]

$$Outcome_{change_i} = \beta_0 + X_T * \beta_T + X_M * \beta_M + X_C * \beta_C + X_T * X_M * \beta_{TM} + X_T * X_M * X_Y * \beta_{TMY} + X_T * X_M * X_G * \beta_{TMG} + X_T * X_M * X_Y * X_G * \beta_{TMYG} + \epsilon \quad (3)$$

The impact of UI on the AWE is assessed by predicting the AWE in the first and second year of unemployment by short versus long contributions. The AWE should increase more from the first to the second year for those in the short group, as they exhaust UI benefits. We test this using the following equation:

$$(AWE_{Year\,2_{Short}} - AWE_{Year\,1_{Short}}) - (AWE_{Year\,2_{Long}} - AWE_{Year\,1_{Long}}) = 0 \quad (4)$$

Assumptions

The main assumption is that outcome trends in the treated and control groups would have evolved in parallel had there been no unemployment in the treatment group. This cannot be tested directly but trends in outcomes before unemployment (pre-trends) might be considered as a proxy (Cunningham, 2021). Appendix 3 illustrates differences in pre-treatment outcome trends for the control and treated groups, starting two years before unemployment with and without weights. Results suggest no pre-trends except for men in the intensive sample. We then show that these are due to young men without children leaving their jobs. To check whether pre-trends are also parallel among subgroups with different levels of moderator variables, in Appendix 4 we present placebo estimates of the AWE comparing average outcomes measured in months 31 to 26 to average outcomes measured in months 18 to 7 before unemployment in the treated versus the control group. We find significant effects in 4 of 92 cases, with significant effects in different groups and directions than suggested by theory and found in the main analysis—i.e., presumably random.

5. Results

5.1 The AWE

Figure 1 illustrates that among women who were not working when their partner lost their job, there is a significant increase in employment of 3.2 ppts 10 months after unemployment (an insurance rate of 13% given an income gain of 144 CHF and a household income loss of 1,071 CHF), with increases enduring beyond 23 months (2.8 ppts). For women who were already working, the intensive AWE is in the expected direction, but insignificant at 60 CHF in month 18 (a 7% insurance rate with income losses of 804 CHF). For men, the overall AWE is largely insignificant apart from a small and temporary negative intensive AWE (clarified by young childless men quitting their jobs, as described in Appendix 3, as well as negative sub-group effects detailed below).

INSERT "FIGURE1_balanced.docx"

Fig 1: Average AWEs on the extensive (employment) and intensive (earnings) margins for men and women.
Notes: results based on weights that adjust differences in age and pre-treatment outcomes between treated and control groups (see Appendix 3 for unweighted results).

5.2 Need

We consider heterogeneity in the AWE looking at: pre-unemployment household income tercile, household income tercile combined with dependency on lost income, and UI benefit duration, finding no effects.[19]

Figure 2 (top panel) illustrates that there are significant differences in extensive reactions among women by household income tercile in the second year. Women in the bottom tercile increase employment by .3 ppts, the middle tercile 5.1 ppts, and the highest by 6.9 ppts. Standardizing by income lost, the AWE replaces 11% of lost income for the middle tercile and 10% for the upper tercile (127 CHF of 1161 CHF and 440 CHF of 4,301 CHF respectively). (The lowest tercile of women increased earnings by 59 CHF while their average household income excluding *increased* by 56 CHF—see Appendix 5 showing benefit receipt.)[20] Intensive reactions were insignificant but had the same pattern: no AWE among the bottom tercile, 63.8 CHF in the middle tercile, and 108.7 CHF in the top. Among men the differences in AWE by income tercile are null, except for a negative extensive AWE of 11.6 ppts in employment for those whose partners are top income tercile breadwinners (a rare situation covering just 2.1% of male partners).

In a second step (Figure 2, middle panel) we consider the percent of income earned by the unemployed partner by household income tercile. While the tendency is in the expected direction for women (stronger AWEs when the primary earner is unemployed) the difference is very small, never significant, and certainly not larger for those in the bottom income tercile. For men results are also insignificant, with the tendency in the opposite direction—men increase earnings more only when their unemployed wives were equal or secondary earners.

In the third panel of Figure 2 we consider whether having longer UI benefit eligibility "crowds out" the AWE. Those with under 18 months of contributions have one year of UI eligibility compared to 1.5 years for those with

18+ months. In the Appendix in Figure A2 we show that this eligibility difference translates into a difference of a little over 1,300 CHF/month for male partners and 1,750 CHF in UI benefit receipt for female partners in months 13-17 after unemployment. The difference in UI benefit eligibility has no effect on the partner's extensive or intensive AWE, with DiD estimates (comparing the difference in the AWE in the two groups in year two of unemployment to the difference in year one) equal to 0 for both men and women.[21]

INSERT "FIGURE2_Need.docx"

Fig 2: AWE by need.

Notes: Panel 1: Extensive and intensive AWE effects by household income tercile; Panel 2: The intensive AWE effects by tercile and partner's contribution to household income; Panel 3: The intensive and extensive AWE depending on UI benefit eligibility, among those with more than 250 days of benefits; for all, 95% confidence intervals, significance test = Wald test for differences in AWE between short versus long benefits in year 2 versus year 1 (DiD), + = p<.1; * = p<.05, ** = p<.01; *** = p <.001).

5.3 Capacity

In Figure 4 in the first panel, we illustrate capacity using the partner's earnings just prior to their partner's unemployment, compared to their highest earnings in the past 10 years. In the middle panel we illustrate capacity using the residual of predicted partner income—i.e., whether the individual is under-earning given their region, age, and past earnings, among other control variables (see Appendix 1). Using both approaches there are no significant differences by capacity for non-working female partners. Even the tendency is not consistent. In only 10 of 16 estimates did high-capacity individuals increase employment or earnings more.

In the third panel we compare AWEs based on child age. Employed women with children under age 3 are most likely to increase their earnings while women with older children also increase their earnings, albeit less, and women with no children do not increase earnings at all. Intensive reactions among women with young children are 106 CHF in year 1 and 185 CHF in year 2, compared to household income losses of 1,273 CHF and 1,034 CHF, i.e., insurance values of 8% and 18%. For extensive reactions there is a significant difference between mothers with younger and older children but in the opposite direction. Non-working mothers with young children remain at home while in year 2, non-working mothers with older children increase their employment by 3.3 percentage points (earning 166 CHF of 609 CHF in lost earnings or 27% insurance).

For men the story is different with non-working fathers increasing their employment most if they have young children (5.6 ppts.), somewhat if they have older children (3.5ppts) and *decreasing* employment if they have no children (-4.7 ppts). The difference between those with and without children is statistically significant though the differences between young and old children is not. Given greater income gains and smaller household income losses, the insurance value is greater for fathers with older children than younger (8% versus 6%, with an AWE of 103 CHF and 1,242 CHF in income losses versus 84 CHF and 1,466 CHF).

INSERT "FIGURE3_Capacity.docx"

Fig 3: AWE depending on the partner's capacity.

Notes: First panel: Using current versus highest prior earnings as a proxy, second panel using the residual of predicted earnings, and third considering children and child age. 95% confidence intervals, significance test = Wald test for differences in AWE between the high versus low-capacity partners, + = p<.1; * = p<.05, ** = p<.01; *** = p <.001).

5.4 Willingness

The third mechanism is the individual's willingness to increase employment and earnings. Figure 4, upper left panel, shows the extensive and intensive AWEs for married versus cohabiting couples. Among women, extensive reactions are significant in years 1 and 2 but the AWE is statistically indistinguishable between married and cohabiting women. For men, all the AWEs are statistically indistinguishable from zero, but the *difference* between married and cohabiting men for intensive reactions is significant. Working men whose wives lose their jobs increase earnings while cohabiting men whose partners lose their jobs *decrease* earnings. The size of these reactions is small in insurance terms. Married non-working women increase their employment by 2.3 and 2.4 ppts in years 1 and 2, increasing earnings by 61 and 80 CHF, an insurance value of 5 and 9% given income losses of 1,174 and 933 CHF. For married working men, the intensive AWE is 43 CHF and 136 CHF in years 1 and 2, an insurance value of 4 and 9% respectively (given income losses of 990 and 1,004 CHF).

The upper right-hand panel of Figure 4 compares AWE by marital duration (10^{th} or 90^{th} percentiles, i.e., 1.5 versus 18 years). For extensive female reactions, the AWE for long-married women is statistically significant, and significantly greater than for recently married women. Women who were not working increased their employment by 4.3 and 4.9 ppts in years 1 and 2, increasing their incomes by 92 and 156 CHF, with insurance values of 6% and 14% respectively (income losses of 1,473 and 1,133 CHF).

In the bottom-left panel we can see the results for a third measure of willingness—name change. For women, results are insignificant but generally in the expected direction with higher point estimates for labor market entry and earnings following partner's unemployment for those women who adopted their partner's name. For men results are mixed with insignificant results in the opposite direction for intensive reactions: men whose wives did not adopt their name increased earnings more.

The last measure of willingness was related to families with shared biological children versus stepfamilies. For women, we see extensive reactions in the expected direction. Women in households with biologically shared children have a greater AWE than women in household with stepchildren (2 ppts in employment in year 1 and 4.1 ppts. in year 2 compared to reductions in work of -2.8 and -1.9 ppts.) This is an insurance value of 15% in year 1 and 28% in year 2 (income gains of 120 CHF and 198 CHF compared to losses of 800 and 717 CHF).

INSERT "FIGURE4_Willingness.docx"

Fig 4: AWE differences based on willingness.

Notes: Measured with marital status, marital duration, wives' name change, and family type, 95% confidence intervals, significance test = Wald test for differences in AWE between subgroups, + = p<.1; * = p<.05, ** = p<.01; *** = p <.001).

6. Discussion

In this article we developed a theoretical framework classifying the factors that might inhibit the "Added Worker Effect" (AWE), intra-household insurance in which partners increase employment and/or earnings following unemployment, labelling mechanisms as: insufficient *need*, low *capacity* to increase earnings, and a lack of *willingness*.

The overall average AWEs for women are small with increases in employment ("extensive reactions") around 150 CHF or a 13% insurance value with smaller insignificant intensive AWEs. Unstandardized results are similar to those from studies using similar methods though insurance values are higher due to the lower level of lost household income in Switzerland (Hardoy and Schøne, 2014; Ehlert, 2016; Halla et al., 2020; Cammeraat et al., 2022).

We found no evidence that *need* plays a role in driving the AWE. The extensive AWE among women increased with household income rather than decreasing, a common finding (Stephens, 2002) attributed to the fact that those in lower income households are unable to find employment or increase hours (Keldenich and Knabe, 2018; Gong, 2011) and often have access to means-tested benefits (McGinnity, 2002) (also suggested by our analysis in Appendix 5). Looking at the household's dependence on lost income within economic tercile, an approach not seen within the literature likely because of sample size requirements, we found no significant differences. Finally, null results for differences by UI maximum potential benefit duration cast doubt on suggestions that UI might "crowd out" the AWE (Cullen and Gruber, 2000; Schmieder and von Wachter, 2016).

On the *capacity* dimension results were unclear. A high prevalence of part-time work might anticipate stronger intensive than extensive AWEs, but extensive effects were stronger (174 vs 60 CHF per month), confirming Cammeraat et al. (2022) (studying the Netherlands, which also has high female part-time rates). Further, the first two measures of capacity (current versus past and predicted earnings) showed no effects. However, comparing AWEs by child age, we found intensive AWEs were higher for mothers of young children than older children, confirming Halla et al. (2020) (though contradicting Ehlert (2016) which used a different control group design). In contrast, stay-at-home mothers of older children were more likely to enter the workforce in response to partner unemployment than those with younger children. These results are likely attributable to the fact that working mothers with young children recently reduced and have the capacity to (temporarily) increase work while non-working mothers of young children would have to invest significant effort in finding a job and childcare for what should be a short-term period. In contrast, non-working mothers with *older* children are likely considering returning to the workforce regardless (Buchman et al., 2003).

Results on differences in the AWE by child age should also be interpreted with respect to *willingness*, a mechanism also supported by other evidence. The fact that women with young children have a stronger intensive AWE while those with older children have a stronger extensive, suggests there is an AWE when women are changing their balance of paid- vs. care-work anyhow—i.e., that partner unemployment *does not lead them to reconsider their roles* (Gush, 2015). In contrast, for men, who have an significant extensive AWE irrespective of child age, those with children return to their traditional role of breadwinner upon partner unemployment (Killewald and García-Manglano, 2016). Other results confirm willingness is important. Marriage, and marital duration were associated with a greater intensive and extensive AWE with relatively large effects compared to the literature (non-working long-term married wives increase employment 5 percentage points and working married men increase earnings by 136 CHF). This confirms (Triebe, 2015) and is supported by literature showing greater financial pooling among married couples (Pepin, 2019; Präg et al., 2019). It is unclear whether findings reflect a rational calculation of joint economic interests, a change in marital commitment and values, or the selection of those oriented towards sharing to be married and to remain together. In contrast, a measure purely related to values—the choice to change one's last name— is not associated with a significant AWE. Further, we found stronger extensive AWEs among women with shared biological children than stepchildren. This likely reflects greater economic solidarity in biological families (Sweeney, 2010), though could also be attributable to need, particularly given the lack of stepfamily effects for men. Women in stepfamilies often receive alimony and/or child support while men have a partner who receives payments and might support children from a prior partnership. As such, stepchildren might indicate less economic stress for women, but not for men.

Finally, our analysis found negative AWEs for men, particularly among the non-working childless, and the employed with either lower-than-predicted earnings or cohabiting. We also found employed young and childless men leave their jobs prior to partner unemployment. In contrast, other research looking at men (using a control group not experiencing unemployment spells) found positive intensive male AWEs greater than women's (Triebe, 2015). Still, negative AWEs are not unprecedented. Ehlert (2016) found women without children had a negative AWE in the US; Bredtmann et al. (2018) found negative extensive AWEs for women in Ireland and the UK, attributing results to means-tested UI benefits with steep benefit reduction rates, and Hardoy and Schøne (2014) found that in Norway there is a negative AWE attributable to couples working in the same industry—supported by Juhn & Potter's (2007) finding couples suffering contemporaneous labor shocks—an unlikely explanation in Switzerland given dramatic occupational gender segregation (Wunsch, 2021). More likely, results might be attributable to men following their partners to a new job or to joint leisure.

A key limitation of our study is that our methodological approach does not measure the causal effects of the moderators (apart from the analysis of UI). This means selection and spurious relationships can play a role. For example, while marriage might impact the AWE (growing commitment, the legal obligation to share earnings and wealth), it is also true that those believing in financial solidarity more likely marry. Similarly, we anticipated a null male extensive AWE as a widespread norm of full male employment might mean that lacking labor market participation is a proxy for (mental) health issues. This was not borne out, with positive extensive AWEs for men in the lower and middle income terciles, with low income-capacity (using the residual measure), and for those with children.

A second limitation has to do with measurement and generalizability. With respect to need, Switzerland is a least-likely case with generous social insurance, a strong labor market, high wages, and high wealth. Further, looking at our analysis of UI, the discontinuity in benefits in the second year of unemployment might be too late and affect too few people to lead to a detectable increase in the AWE. Need might play a role in other contexts or with a different variation in UI generosity. In contrast, with respect to capacity, Switzerland is a most-likely case given that women overwhelmingly reduce work after having children and are still relatively likely to temporarily leave the labor market. For this reason, we are not confident the results on female AWEs related to children would hold in other contexts. Further, there are aspects of capacity that we would have liked to have measured such as working hours (Hardoy and Schøne, 2014).

We would summarize our findings as having three main take-aways. First, overall *AWEs are female, while men are more heterogeneous.* We found that the AWE is on average is a female phenomenon while some men (young, unmarried, and childless) *reduce* their earnings and others (those with children) *increase* them—confirming results by Triebe (2015). Second, *need and capacity are not clear predictors of the AWE, but willingness is.* Marriage matters, but more work is necessary to understand why—due to rational-choice, norms, or selection. Further, findings related to children point to the importance of roles. Gush (2015) found that a reason for the low AWE is that couples do not want to change their roles within the household—a finding we confirm for women, given that women engage in an AWE only when coupled with concurrent transitions between care and paid work. In contrast, non-working men with children shift to their socially expected role of breadwinner irrespective of child age. This was likely not detected in earlier research simply because non-working fathers are rare. Third, *AWEs are not a replacement for unemployment insurance.* The maximum estimated AWEs were 100-200 CHF per month compared to UI insured incomes of 3-4,500 CHF in our sample. Further, null evidence for need (including UI generosity) and capacity suggests little potential for the AWE to increase, while the association of the AWE with variables like (long) marriage and (shared) children, suggests that as household forms diversify, if anything, the AWE will diminish. This underlines the importance of UI and suggests it is unrealistic to consider intra-household insurance as a potential substitute for UI (Cullen and Gruber, 2000).

7. References

Aisenbrey, S., Evertsson, M. and Grunow, D. (2009) 'Is There a Career Penalty for Mothers' Time Out? A Comparison of Germany, Sweden and the United States', *Social Forces*, **88**, 573–605.

Apps, P. and Rees, R. (2001) 'Household Production, Full Consumption and the Costs of Children', *Labour Economics*, **8**, 621–648.

Autor, D. H., Duggan, M., Greenberg, K. and Lyle, D. S. (2016) 'The Impact of Disability Benefits on Labor Supply: Evidence from the VA's Disability Compensation Program', *American Economic Journal: Applied Economics*, **8**, 31–68.

Baldini, M., Torricelli, C. and Brancati, M. C. U. (2018) 'Family Ties: Labor Supply Responses to Cope with a Household Employment Shock', *Review of Economics of the Household*, **16**, 809–832.

Benito, A. and Saleheen, J. (2013) 'Labour Supply as a Buffer: Evidence from UK Households', *Economica*, **80**, 698–720.

Bennett, F. (2013) 'Researching Within-Household Distribution: Overview, Developments, Debates, and Methodological Challenges', *Journal of Marriage and Family*, **75**, 582–597.

BFS (2017) 'Swiss Statistics on Social Assistance Recipients', accessed at https://www.bfs.admin.ch/bfs/en/home/statistics/social-security/surveys/shs.html on August 16, 2017.

BFS (2018) 'Statistik der Bevölkerung und der Haushalte (STATPOP)', accessed at http://www.bfs.admin.ch/bfs/portal/de/index/news/02/03/01/01.html.

Bianchi, S. M. and Milkie, M. A. (2010) 'Work and Family Research in the First Decade of the 21st Century', *Journal of Marriage and Family*, **72**, 705–725.

Bingley, P. and Walker, I. (2001) 'Household Unemployment and the Labour Supply of Married Women', *Economica*, **68**, 157–186.

Blundell, R., Pistaferri, L. and Saporta-Eksten, I. (2016) 'Consumption Inequality and Family Labor Supply', *The American Economic Review*, **106**, 387–435.

Bredtmann, J., Otten, S. and Rulff, C. (2018) 'Husband's Unemployment and Wife's Labor Supply: The Added Worker Effect across Europe', *ILR Review*, **71**, 1201–1231.

Bryan, M. and Longhi, S. (2018a) 'Couples' Labour Supply Responses to Job Loss: Growth and Recession Compared', *The Manchester School*, **86**, 333–357.

Bryan, M. and Longhi, S. (2018b) 'Couples' Labour Supply Responses to Job Loss: Growth and Recession Compared', *The Manchester School*, **86**, 333–357.

Buchman, M., Kriesi, I. and Sacchi, S. (2003) 'Labor-Market Structures and Women's Paid Work: Opportunities and Constraints in the Swiss Labor Market', *Advances in Life Course Research*, **8**, 165–188.

Cammeraat, E., Jongen, E. and Koning, P. (2022) 'The Added-Worker Effect in the Netherlands before and during the Great Recession', *Review of Economics of the Household*.

Cefalu, M., Vegetabile, B. G., Dworsky, M., Eibner, C. and Girosi, F. (2020) 'Reducing Bias in Difference-in-Differences Models Using Entropy Balancing', *arXiv.org*.

Central Compensation Office (CCO) (2018) 'Individual Accounts', accessed at https://www.zas.admin.ch/zas/de/home/services-en-ligne/particuliers/extrait-du-compte-individuel.html on February 15, 2018.

Chow, G. C. (1960) 'Tests of Equality Between Sets of Coefficients in Two Linear Regressions', *Econometrica*, **28**, 591–605.

Cools, S. and Strøm, M. (2016) 'Parenthood Wage Penalties in a Double Income Society', *Review of Economics of the Household*, **14**, 391–416.

Csonka, Y. and Mosimann, A. (2017) *Les Familles En Suisse : Annexe Statistique Du Rapport Du Conseil Fédéral Du 26 Avril 2017 En Réponse Aux Postulats 12.3144 Meier-Schatz Du 14 Mars 2012 et 01.3733 Fehr Du 12 Décembre 2001*, Neuchâtel, Office fédéral de la statistique (OFS).

Cullen, J. B. and Gruber, J. (2000) 'Does Unemployment Insurance Crowd out Spousal Labor Supply?', *Journal of Labor Economics*, **18**, 546–572.

Cunningham, S. (2021) *Causal Inference: The Mixtape*, New Haven, Yale University Press.

Di Nallo, A., Lipps, O., Oesch, D. and Voorpostel, M. (2022) 'The Effect of Unemployment on Couples Separating in Germany and the UK', *Journal of Marriage and Family*, **84**, 310–329.

Edwards, K. (2019) 'Who Helps the Unemployed? Workers' Receipt of Private and Public Transfers', *RAND Education and Labor Working Paper WR-1315, Santa Monica, CA*.

Ehlert, M. (2012) 'Buffering Income Loss Due to Unemployment: Family and Welfare State Influences on Income after Job Loss in the United States and Western Germany', *Social Science Research*, **41**, 843–860.

Ehlert, M. (2016) 'Couples' Strategies after Job Loss in West Germany and the United States – The Added Worker Effect and Linked Life Courses', *Journal of Contextual Economics – Schmollers Jahrbuch*, accessed at http://elibrary.duncker-humblot.com/journals/id/24/vol/135/iss/1287/art/5056/ on April 21, 2021.

Eickmeyer, K. J., Manning, W. D. and Brown, S. L. (2019) 'What's Mine Is Ours? Income Pooling in American Families', *Journal of Marriage and Family*, **81**, 968–978.

Eurostat (2018) *People in the EU- Statistics on Household and Family Structures/Database*, Eurostat.

Fackler, D. and Weigt, E. (2019) 'Who Buffers Income Losses after Job Displacement? The Role of Alternative Income Sources, the Family, and the State', *LABOUR*, **n/a**.

Fadlon, I. and Nielsen, T. H. (2019) 'Household Labor Supply and the Gains from Social Insurance', *Journal of Public Economics*, **171**, 18–28.

Federal Council (2006) 'Verordnung Vom 1. November 2006 Über Das Informationssystem Für Die Arbeitsvermittlung Und Die Arbeitsmarktstatistik (AVAM-Verordnung)', accessed at https://www.admin.ch/opc/de/classified-compilation/20061964/index.html on July 25, 2019.

Ghignoni, E. and Verashchagina, A. (2016) 'Added Worker Effect during the Great Recession: Evidence from Italy', *International Journal of Manpower*, **37**, 1264–1285.

Gong, X. (2011) 'The Added Worker Effect for Married Women in Australia*', *Economic Record*, **87**, 414–426.

Gorbachev, O. (2016) 'Has the Increased Attachment of Women to the Labor Market Changed a Family's Ability to Smooth Income Shocks?', *American Economic Review*, **106**, 247–251.

Gordon, J. C. (2019) 'The Perils of VanguardismExplaining Radical Cuts to Unemployment Insurance in Sweden', *Socio-Economic Review*, **17**, 947–968.

Gough, M. and Killewald, A. (2011) 'Unemployment in Families: The Case of Housework', *Journal of Marriage and Family*, **73**, 1085–1100.

Grotti, R. and Scherer, S. (2014) 'Accumulation of Employment Instability Among Partners—Evidence from Six EU Countries', *European Sociological Review*, **30**, 627–639.

Grotti, R. and Scherer, S. (2016) 'Does Gender Equality Increase Economic Inequality? Evidence from Five Countries', *Research in Social Stratification and Mobility*, **45**, 13–26.

Guner, N., Kulikova, Y. and Valladares-Esteban, A. (2020) 'Does the Added Worker Effect Matter?', , 32.

Gush, K., Scott, J. and Laurie, H. (2015) 'Households' Responses to Spousal Job Loss: "All Change" or "Carry on as Usual"?', *Work, Employment and Society*, **29**, 703–719.

Haan, P. and Prowse, V. L. (2017) *Optimal Social Assistance and Unemployment Insurance in a Life-Cycle Model of Family Labor Supply and Savings*, SSRN Scholarly Paper, Rochester, NY, Social Science Research Network.

Hainmueller, J. (2012) 'Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies', *Political Analysis*, **20**, 25–46.

Halla, M., Schmieder, J. and Weber, A. (2020) 'Job Displacement, Family Dynamics and Spousal Labor Supply', *American Economic Journal: Applied Economics*.

Hardoy, I. and Schøne, P. (2014) 'Displacement and Household Adaptation: Insured by the Spouse or the State?', *Journal of Population Economics*, **27**, 683–703.

Harkness, S. and Evans, M. (2011) 'The Employment Effects of Recession on Couples in the UK: Women's and Household Employment Prospects and Partners' Job Loss', *Journal of Social Policy*, **40**, 675–693.

Himmelweit, S., Santos, C., Sevilla, A. and Sofer, C. (2013) 'Sharing of Resources Within the Family and the Economics of Household Decision Making', *Journal of Marriage and Family*, **75**, 625–639.

Juhn, C. and Potter, S. (2007) *Is There Still an Added-Worker Effect?*, SSRN Scholarly Paper, Rochester, NY, Social Science Research Network.

Keldenich, C. and Knabe, A. (2018) 'Labor Market Responses to Partners' Unemployment and Low-Pay Employment', Kiel, Hamburg: ZBW - Leibniz-Informationszentrum Wirtschaft.

Kelley, K. (2023) 'The Effect of Marital Name Choices on Heterosexual Women's and Men's Perceived Quality as Romantic Partners', *Socius*, **9**, 23780231221148150.

Killewald, A. and García-Manglano, J. (2016) 'Tethered Lives: A Couple-Based Perspective on the Consequences of Parenthood for Time Use, Occupation, and Wages', *Social Science Research*, **60**, 266–282.

Kohara, M. (2010) 'The Response of Japanese Wives' Labor Supply to Husbands' Job Loss', *Journal of Population Economics*, **23**, 1133–1149.

Kopp, J., Lois, D., Kunz, C. and Becker, O. A. (2010) *Verliebt, Verlobt, Verheiratet*, Wiesbaden, VS Verlag.

Krutova, O., Koistinen, P. and Nummi, T. (2018) 'The Effect of Partner Buffering on the Risk of Unemployment in Finland', *International Journal of Sociology and Social Policy*.

Kulic, N. and Sani, G. M. D. (2020) 'Within-Couple Distribution of Economic Resources', *Italian Review of Sociology*, 28.

Lundberg, S. (1985) 'The Added Worker Effect', *Journal of Labor Economics*, **3**, 11–37.

Mankart, J. and Oikonomou, R. (2016) 'The Rise of the Added Worker Effect', *Economics Letters*, **143**, 48–51.

Mattingly, M. J. and Smith, K. E. (2010) 'Changes in Wives' Employment When Husbands Stop Working: A Recession-Prosperity Comparison', , **59**, 343–365.

McGinnity, F. (2002) 'The Labour-force Participation of the Wives of Unemployed Men: Comparing Britain and West Germany Using Longitudinal Data', *European Sociological Review*, **18**, 473–488.

Mincer, J. (1962) *Labor Force Participation of Married Women: A Study of Labor Supply*, Princeton University Press, Aspects of labor economics.

OECD (2018) 'Unemployment-benefit Coverage: Recent Trends and Their Drivers', , 185–210.

Oesch, D. and Rieger, A. (2006) 'Minimum Wage Policy via Collective Bargaining: The Swiss Trade Unions' Minimum Wage Campaign'. In *Minimum wages in Europe*, pp. 277–302.

Parker, S. W. and Skoufias *, E. (2004) 'The Added Worker Effect over the Business Cycle: Evidence from Urban Mexico', *Applied Economics Letters*, **11**, 625–630.

Pepin, J. R. (2019) 'Beliefs About Money in Families: Balancing Unity, Autonomy, and Gender Equality', *Journal of Marriage and Family*, **81**, 361–379.

Präg, P., Begall, K. and Treas, J. (2019) 'Understanding the Marriage–Cohabitation Gap in Income Pooling: Evidence from 29 European Countries'.

Sarlo, C. (2013) *The Cost of Raising Children*, SSRN Scholarly Paper, Rochester, NY, Social Science Research Network.

Schmieder, J. F. and von Wachter, T. (2016) 'The Effects of Unemployment Insurance Benefits: New Evidence and Interpretation', *Annual Review of Economics*, **8**, 547–581.

Schwartz, C. R. (2010) 'Earnings Inequality and the Changing Association between Spouses' Earnings', *American Journal of Sociology*, **115**, 1524–1557.

Spletzer, J. R. (1997) 'Reexamining the Added Worker Effect', *Economic Inquiry*, **35**, 417–427.

Starr, M. A. (2014) 'Gender, Added-Worker Effects, and the 2007–2009 Recession: Looking within the Household', *Review of Economics of the Household*, **12**, 209–235.

Steiber, N. and Haas, B. (2012) 'Advances in Explaining Women's Employment Patterns', *Socio-Economic Review*, **10**, 343–367.

Stephens, J., Melvin (2002) 'Worker Displacement and the Added Worker Effect', *Journal of Labor Economics*, **20**, 504–537.

Stutz, H., Stettler, P., Dubach, P. and Gerfin, M. (2019) *Berechnung Und Beurteilung Des Grundbedarfs in Den SKOS-Richtlinien*, BASS.

Sweeney, M. M. (2010) 'Remarriage and Stepfamilies: Strategic Sites for Family Scholarship in the 21st Century', *Journal of Marriage and Family*, **72**, 667–684.

Triebe, D. (2015) *The Added Worker Effect Differentiated by Gender and Partnership Status – Evidence from Involuntary Job Loss*, SSRN Scholarly Paper, Rochester, NY, Social Science Research Network.

Verbakel, E. and de Graaf, P. M. (2009) 'Partner Effects on Labour Market Participation and Job Level: Opposing Mechanisms', *Work, Employment and Society*, **23**, 635–654.

Wunsch, C. (2021) *The Gender Pay Gap Revisited with Big Data: Do Methodological Choices Matter?*, IZA.

Zhang, S. (2014) 'Wage Shocks, Household Labor Supply, and Income Instability', *Journal of Population Economics*, **27**, 767–796.

Zhao, Q. and Percival, D. (2017) 'Entropy Balancing Is Doubly Robust', *Journal of Causal Inference*, **5**.

8. Appendix

8.1 Variable definitions and descriptive statistics

Insert Table A1_1_variableDefinitions here

Table A1.1: Variable definitions

Insert Table A1_2_couples here

Table A1.2: Descriptive statistics for couples.

Insert Table A1_3_individuals here

Table A1.3: Descriptive statistics for individuals.

8.2 Treatment intensity

Main AWE Effects (incomes shocks)

What exactly is the treatment for partners—that is, what is the household income shock they respond to? We define this household income as including the unemployed person's employment income and all social insurance income (UI, disability insurance, maternity insurance, military insurance, and social assistance) received by both but

excluding the partner's employment income. The difference between the treated and control groups is measured as the coefficient of interactions terms (β_{DID_i}) between the treatment indicator T and the observation month m_i (with i ranging from -11 to 23) from OLS models predicting household income. The reference month is -12. The model has the following form:

$$Outcome_{level} = \beta_0 + X_T * \beta_T + X_{m_i} * \beta_{M_i} + X_T * X_{m_i} * \beta_{DID_i} + \epsilon \quad \text{(A.2)}$$

Figure A2.1 illustrates this difference in household income less the partner's earned income from 12 months before, to 23 months after, the start of unemployment for the control versus the treated group, separately for the extensive and intensive samples. Measured as a drop in equivalized household income level from month -1 to 1, this is a 32-37% household income drop for women (-23% if we measure the DiD loss in absolute income) and for men this is a raw 21-23% loss (-13 to 14% using the DiD loss in absolute income). These relatively low-income losses reflect the UI replacement rate which is between 70 and 80% depending on dependents and prior earnings.

For both men and women, household incomes recover and stabilize, as partners go back to work—though due to lingering unemployment and lower reemployment wages, income remains lower some 10 months after the unemployment spell began—about 500 CHF lower for male partners and 850 CHF for previously working women and 1106 for previously non-working women. In sum, UI recipient households suffer a significant income shock that does not recover to prior earnings, but this shock is strongly buffered by the UI system with households losing 20-40% of the household income.

INSERT FIGURE A2.1_Figure_treatment_main_balanced.png

Caption:

Fig A2.1: DiD estimate of the household's income losses.

Notes: Baseline difference = difference between treated and controls in month 24 before unemployment. Household income excludes partner's earnings.

Treatment Intensity, UI generosity and the AWE (lower benefit receipt with shorter UI contributions)

The analysis of the impact of UI benefit generosity on the AWE exploits a discontinuity in policy design in which the lower contribution group should receive less benefits—with a sudden difference due to rules rather than a continual trend related to difference in employability. In Figure A2.2 we see that up to 11 months from the start of the unemployment spell, those with long contributions receive more benefits (because of higher insured wages). However, one year into UI receipt this difference suddenly increases to over 1,000 CHF—due to the difference in UI rules based on contribution histories. The lower UI entitlement creates substantial hardship. For men with higher contributions the lost household income (excluding their wives' reactions) remains stable at about 1,100-1,200 CHF from year 1 to year 2, while for men with lower contributions, the relative loss from pre-UI incomes triples from a 500 CHF to a more than 1,500 CHF income gap in year 2. This spike in lost benefit income is expected to translate into stronger AWEs.

INSERT FIGURE A2.2_treatment_UIdesign.png

Fig A2.2: The DiD estimate of UI transfers for the long versus short UI contribution groups.
Notes: Includes only individuals with at least 250 days of benefits. Baseline difference = difference between long versus short contribution group in month of unemployment.

8.3 Parallel pre-treatment trends with a specific focus on men in the intensive sample

In this appendix we present results on differences in pre-treatment outcome trends for the control and the treated groups, starting two years before unemployment. We present both unweighted trends and trends using entropy balancing weights (Hainmueller, 2012; Zhao and Percival, 2017; Cefalu et al., 2020), showing how weights impact whether the trends are parallel. For the control group we balance both partners' pre-treatment employment and income as well as age to match that of partners in the treated group.

For women, we find that pre-unemployment treated and control trends are parallel, as differences from the baseline difference (measured in month 24 before unemployment) only emerge after unemployment start. Balancing age differences and differences in pre-unemployment outcomes barely change results for women. For men, household income differences between the treated and control groups remain largely stable in the second year before unemployment, both in the extensive and intensive samples. Also, in the extensive sample, differences in employment are clearly parallel until few months before unemployment. In the intensive sample, however, household income of the treated starts to drop about 12 months before unemployment. Balancing weights even out differences in household income until the seventh month before unemployment. The drop in household income after the seventh month is not necessarily a violation of the parallel trends assumption in that household income can drop before registered unemployment start if job loss occurs before registration (i.e., women wait longer to register).

Although not statistically significant, results for men in the intensive sample show a declining pre-unemployment income. Balancing for pre-unemployment incomes until the seventh month before unemployment flattens out this trend, but the unbalanced finding might indicate some violations of the parallel trends assumption. Therefore, we investigated the reasons for this pattern.

INSERT FIGURE A3.1_Figure_treatment_main_balanced

Caption
Fig A3.1: Average AWEs on the extensive (employment) and intensive (earnings) margins for men and women.
Notes: Balanced results based on weights that adjust differences in age and pre-treatment outcomes between treated and control groups.

In Figure A3.2 we show the results for a hypothesis explaining the finding: the decline in earnings could potentially be a choice for joint leisure consumption for young couples informed about the female partner's forthcoming job loss, with the unemployed partner managing to comply with job search requirements (no sanctions) during their leisure time. We find that non-parallel pre-trends are indeed concentrated among young men without children who

quit their jobs prior to their female partners signing up for unemployment insurance. Although balancing allows to estimate effects based on samples with parallel pre-trends and thus provide viable approximations of causal estimates of the AWE, these results show that, among some men in the intensive sample, there might be endogenous labor market choices.

INSERT FIGURE A3.2_young_nochildren

Caption

Fig A3.2: Male intensive reactions, young men without children versus others.

8.4 Placebo test/ pre-trends for subgroups

The parallel trends assumption not only has to apply for the overall sample, but also for each subgroup that we study. To check whether pre-treatment trends are parallel among subgroups with different levels of moderator variables we present placebo estimates of the AWE comparing average outcomes measured in months -31 to -26 to average outcomes measured in months -18 to -7 before unemployment in the treated versus the control group. Main effects test the treatment versus the control group while group comparisons are by category or the 90th versus 10th percentile. When placebo tests do not statistically differ from zero, pre-treatment trends are assumed to be parallel.

As illustrated in Table A.4, of the 92 tested pre-trends just four are significant. Three of these are in areas not significant in the main analysis (extensive effects among men with higher capacity using the residual earnings definition, and intensive AWEs among women based on marital duration and partner name). The placebo effect for extensive AWEs among women by biological children was significant in both the placebo test and the main analysis—but in opposite directions with the main analysis showing the effect anticipated by theory (a larger AWE among those with biologically shared children) and the placebo test showing the opposite. With just four percent having significant effects and in directions not corroborated by theory or the main analysis, these are likely random and overall placebo analyses do not suggest violations of the parallel trend assumption.

INSERT TABLE A4_Placebo

Caption

Table A4: DiD estimates for period -1 (months -18 to -7) versus period -2 (months -31 to -26), point estimate and 95% confidence intervals

8.5 The bottom 10%

One potential reason households in the lowest tercile incomes have a low AWE is that this group might access other forms of social insurance. Here for the bottom decile (household income pre-unemployment spell) we examine the increase in the probability of going onto any other form of social insurance (social assistance (household), disability (either), or UI (partner)) and the AWE disaggregating between those who move to other social benefits and those who do not.

Figure A5.1 shows DiD estimates of social benefit income for men and women in the extensive and intensive samples whose household income was in the bottom decile before unemployment. The DiD estimates are close to 0 up to 5 months before the start of the unemployment spell, but then increase, first at the start of the unemployment spell and then again in the second year of unemployment as UI benefit eligibility runs out. This shows that the bottom 10% of households tap into other social benefits when losing jobs and/or UI benefits. Among treated couples in the bottom 10% that did not receive any of the considered benefits before unemployment, 35% received at least one of the considered benefits in the first or second year after unemployment, 20% received social assistance, 17% of couples had a partner taking-up UI benefits, and 4% of the couples had at least one partner taking-up disability insurance.

INSERT Figure A5_1_lowest10percent

Fig A5.1: DiD estimates of social benefit income for the bottom household income decile.
Notes: Social benefit income includes social assistance (household), disability insurance (either partner), and UI benefits (partner). Baseline difference: difference social insurance income treated versus controls in month 11 before unemployment.

In Figure A5.2 we see the extensive and intensive AWEs for men and women in the first and second year of unemployment, comparing those who entered other social insurance programs versus those who did not. Among non-working women in the bottom 10% of households who did not move to another social insurance program, the AWE in year 1 was a 4.3 ppt increase in the probability of working, compared to -1 ppt. among those households moving onto another social insurance program. This gap increased in year 2 to a +5 ppt increase in the chance of working versus a -1 ppt decrease in the percent chance of working. This increased employment generated a difference of 179 CHF/month and 228 CHF/month in earned income. Similarly, among women who were working (extensive sample) those who did not move to another social insurance program increased their wages 74 CHF in the first year (versus a 150 CHF drop if they moved to another social insurance program) and an increase of 58 CHF in the second year (compared to a 154 CHF drop). While there is an AWE among women in poor households who do not take up alternative social insurance, there is no AWE in comparable households for male partners.

INSERT Figure A5_2_Socialbenefit_entry

Caption
Fig A5.2: AWEs among the poorest 10%, by social insurance take-up.
Notes: Social insurance income includes the sum of social assistance (household), disability insurance (either partner), and UI benefits (partner). Take-up is identified when total social insurance income was zero in the year before unemployment and above zero in the year after unemployment.

Results suggest the AWE is a more relevant form of insurance for those households who are not eligible for social insurance. We are hesitant, however, to suggest that these alternative forms of social insurance crowd-out the AWE among the poorest households. This seems unlikely, as we do not see UI crowding out the AWE among the long-

term unemployed. Rather, it seems more likely that many partners in the poorest households are simply *unable* to react by increasing their employment and earnings, and thus turn to the other components of the safety net, particularly as their partners' UI benefits run out. Those families that cannot receive alternative forms of social insurance, are in contrast, able to react with an AWE and do so—on a scale similar to that of the middle class (see the main analysis).

8.6 The effect of UI generosity measured using eligibility discontinuity

A second approach to examining whether UI benefit duration impacted the AWE is to look for discontinuities near the threshold at which individuals qualify for longer UI maximum benefit durations. Here we focus on the sub-population in which the unemployed individual reaches at least 250 days of benefits (i.e., a second year of unemployment) and examine the outcomes in months 12-18 (i.e., when those with under 18 months of contributions lose benefits while those with 18+ months retain them). In Figure A6, on the x axis we plot the number of months of contributions the unemployed partner has—at 18 months they qualify for longer benefits and on the y axis we plot the outcome for months 12-18. The upper panel illustrates the value of UI benefits received (i.e., treatment intensity), showing that the households with less contributions have less UI benefits in the first half of the second year (due to the different months of entitlement). The second panel shows income for the intensive group (partners who already had incomes) and the third panel shows employment for the extensive group (non-working partners). If there were an AWE reaction due to reaching the end of benefit eligibility, we would expect a discontinuity with higher incomes and employment rates among partners of unemployed with 17 months benefits and lower income and employment rates for partners of unemployed with 18 months of benefits—which we do not. This confirms the main analysis using a difference in difference estimate.

INSERT Figure A6_UIdesign_discontinuity

Caption

Fig A6: Contribution months, UI benefits, employment, and earnings by partner gender.

Notes: UI benefits, earnings (intensive samples) and employment (extensive samples) measured in months 12-18. All calculations include individuals with at least one year of benefit receipt (long term unemployed). Eligibility discontinuity is at 18 contribution months: those with >=18 months of contributions have 18 months benefit eligibility versus those with <18 months who have 12 months of benefit eligibility.

8.7 Regression tables

INSERT Table A7_TableForFig1

Table A1: Regression results for Figure 1

[1] While we focus on individual level mechanisms shaping the AWE, it is important to note that overall labor market conditions are also relevant, though there is no evidence suggesting the individual level mechanisms change based on overall conditions (Mattingly and Smith, 2010; Harkness and Evans, 2011; Starr, 2014; Ghignoni and Verashchagina, 2016; Bryan and Longhi, 2018b; Cammeraat et al., 2022).

[2] 1 CHF equivalent to about 1 USD

[3] Workers are exempt from contribution requirements if they recently completed their education, gave birth to a child, were sick, had a divorce or separation, or finished a prison sentence. Women who enter the labor market after taking care of a child can use an extended window to qualify

[4] Possible reasons for sanctions not only are "being unemployed through their own fault", but also "not making sufficient efforts to find suitable work", "not following the instructions of the regional employment office, in particular not accepting suitable work", "not starting or discontinuing a labor market measure without good cause", "not providing information or violating duty to report", "wrongfully obtaining unemployment benefits or attempting to do so".

[5] We ran the analysis including and excluding those sanctioned. Using the restricted sample led to two changes in results. First, some negative (and anticipatory) AWEs among men were reduced and, second, marginally significant results by relative contribution to the household disappeared. The overall result that AWEs are small and that variables related to willingness play an important role, have remained the same. The similarity between results using all separations and only unsanctioned cases suggests both the internal validity of the results as well as the broader generalizability of the findings to all unemployed.

[6] Given increased risk of divorce after unemployment (Halla et al., 2020; Di Nallo et al., 2022), this strategy should exclude increases in need (and subsequently income) related to setting up separate households.

[7] Those under 25 are entitled to less benefits (200/400 days, depending on the presence of dependents) and those over 53 are entitled to longer benefits (400-520 days, depending on contributions). Our sample (age 25-52) are entitled to either 260 or 400 days (depending on contributions).

[8] All monetary estimates are adjusted to 2014 CHF

[9] In Appendix 5, we focus on the bottom income decile. We show that 35% of low-income households moved to other benefits and that unemployed women in households who do not receive alternative social insurance have AWEs similar to what is found in the main analysis looking at the second- and third-income deciles.

[10] All benefits must be claimed within the two years after the start of unemployment, which means that among both groups, there are still recipients at the end of the second year, as some individuals do not receive benefits continuously.

[11] We validated this measure by comparing for those individuals who also participated in the SAKE survey, comparing positive capacity with reports of working PT. Using a longer period (10 years or all years available) maximized the correlation between part time work and positive capacity.

[12] Given skew in the variable, we used a log transformation, adding 1 to all 0's first. We also tested a version of the gap using depreciation, diving the gap by $e^{(rt)}$, with t being the years since highest earnings and r being the depreciation rate, testing various values of r. This adjustment would make the value of high earnings in the more distant path worth less. Empirically, depreciating the gap for time since earnings did not improve the measure's prediction of an AWE.

[13] Same-sex couples are excluded as are opposite gender households with more than 15 years age difference, to not accidentally include roommates or multi-generational households. There might be some mismeasurement of cohabitation, including opposite sex roommates. There is 87% agreement between this definition of cohabitation and explicit reporting of cohabitation using a SAKE subsample (N=322).

[14] In Switzerland, prior to 2013 women could choose to adopt their husband's name or hyphenate their name. Keeping one's maiden name was only possible before 2013 for those married abroad (6.3% of all couples in our sample that married in 2012), but from 2013 onward keeping one's maiden name was also possible for those married in Switzerland. For the analysis including name choice, we exclude couples where the wife kept her name and restrict the sample to marriages between 1998 and 2012 (1998 being the earliest year with information on the variable).

[15] See the online appendix for the approach to testing the parallel trends assumptions and describing treatment intensity (household income lost due to unemployment).

[16] To address potential concerns about multicollinearity we also estimated each mechanism separately, checking the parameters and confidence intervals remained similar, which they did.

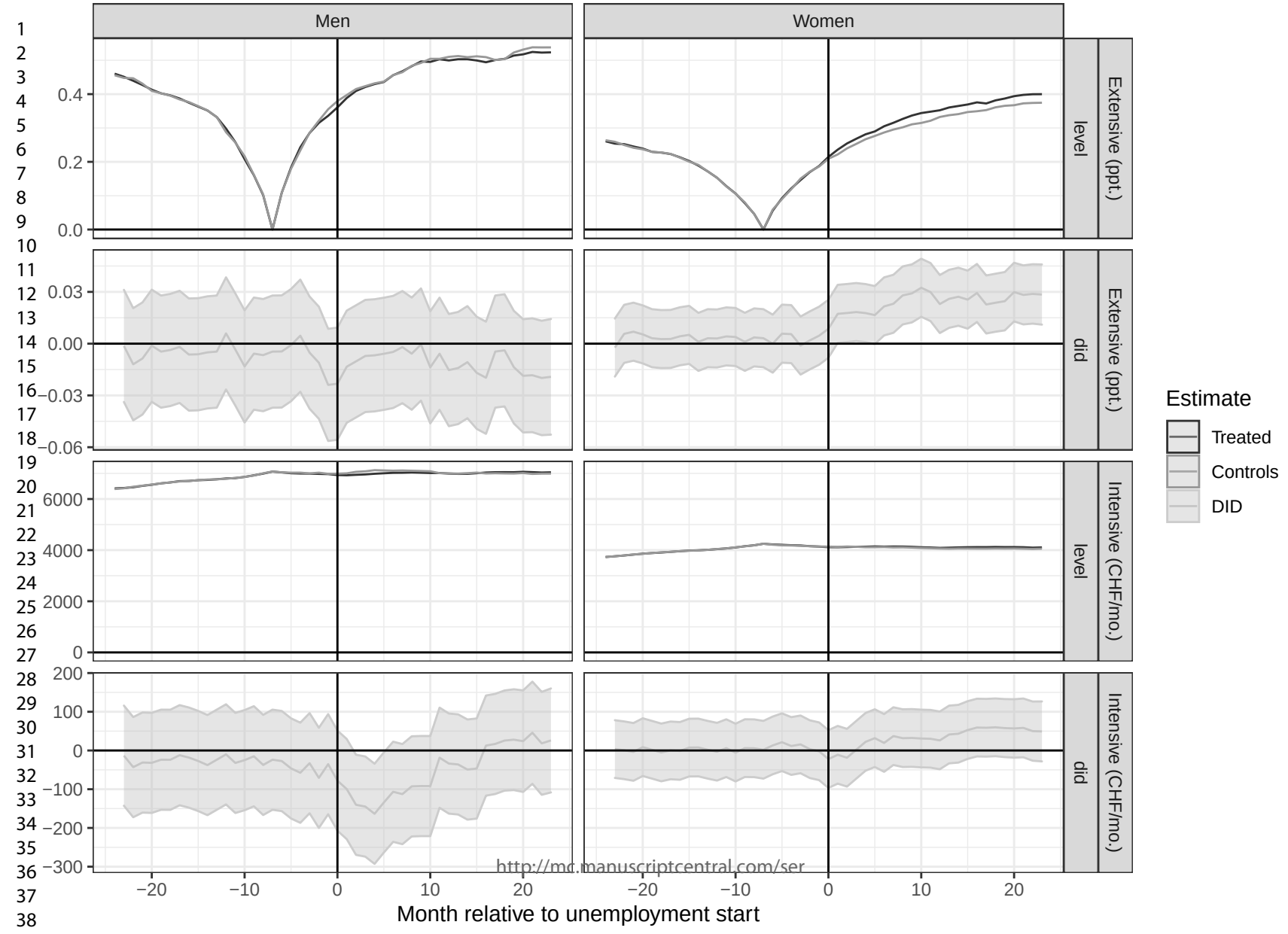
[17] For household income we compare the first and third income terciles.

[18] We used this model to be able to make claims about how UI moderates the AWE. An alternative approach would be to exploit the cut-off at 17 months to test for the effect of longer UI—shown in the appendix 6. Using the partner's income in the second year after unemployment as the outcome variable, contribution months as the running variable and 17/18 contribution months as the cut-off, we do not find any significant effect of UI benefits. Conclusions remain the same using both designs.

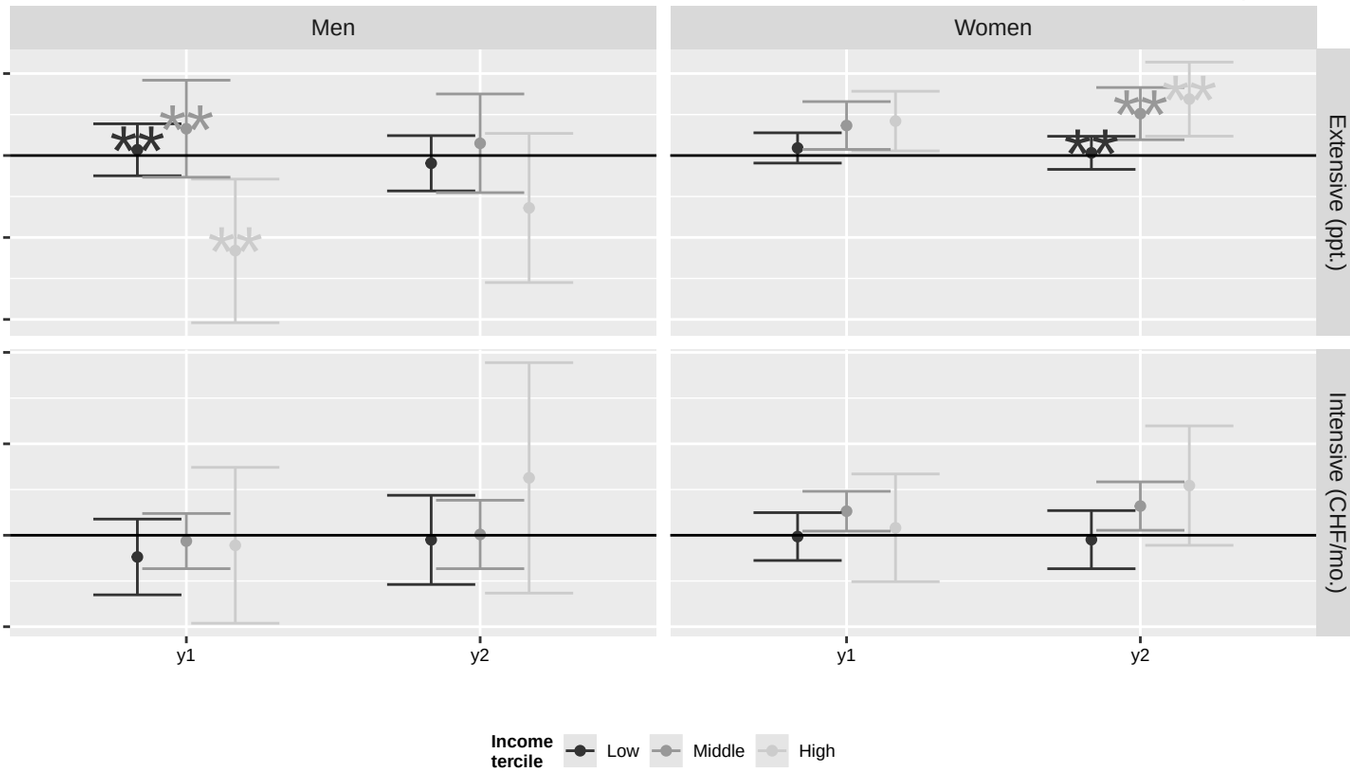
[19] In addition, in the appendix we focus on the bottom 10% of earners, looking at their AWE and whether it is impacted by the possibility of receiving other benefits.

[20] While the null AWEs among the lower income tercile might seem surprising, in Appendix 5 we illustrate that for households in the bottom 10th percentile some 35% access other benefits. Among those not able to access other benefits, the extensive AWE is similar to those in the middle and upper income terciles, just above 5 percentage points in employment.

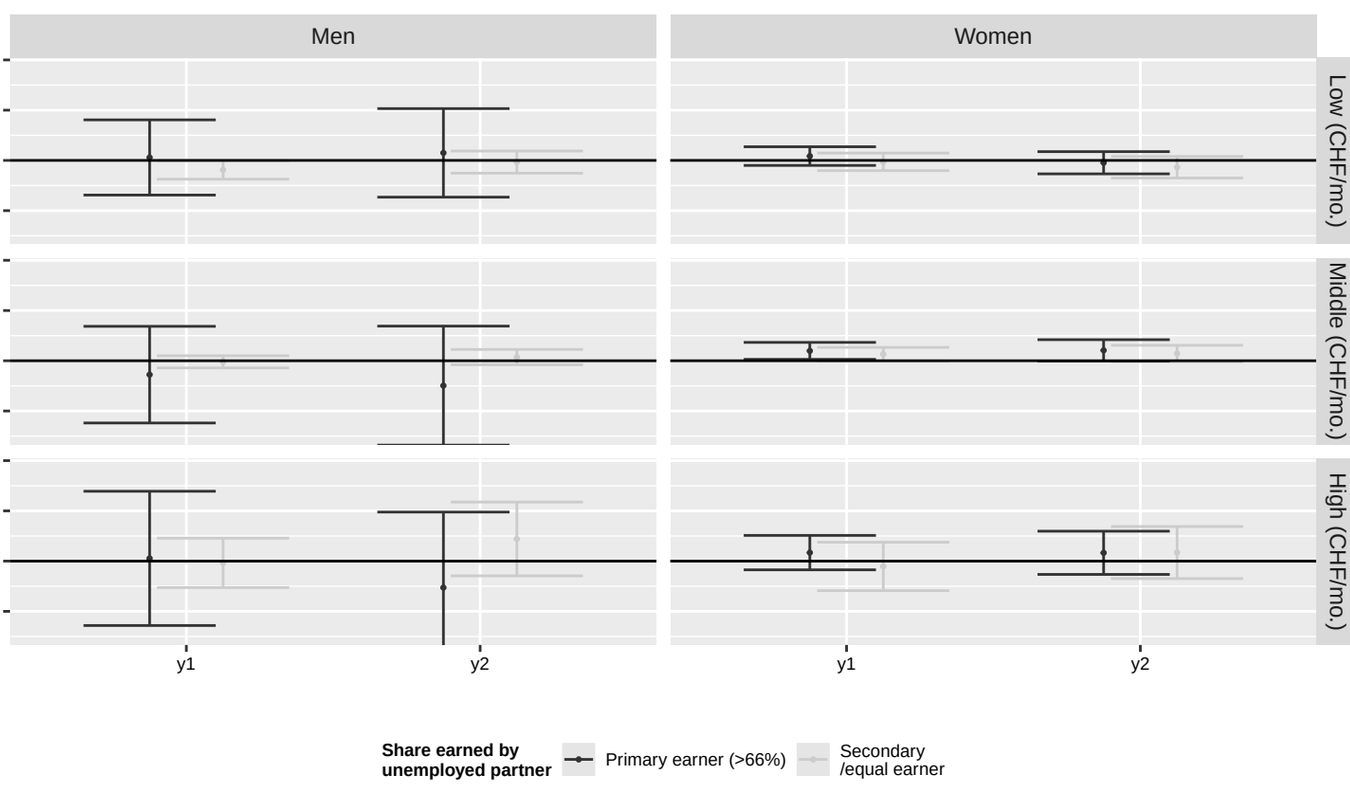
[21] In the appendix we take an alternative methodological approach, looking for discontinuities in the extensive and intensive margins based on months contributions. Null results are confirmed: while there is a clear increase in UI income (measured in month 12 to 17 after unemployment start) of about CHF 1500/mo., we see no reduction in partner income (both in the intensive and extensive samples).



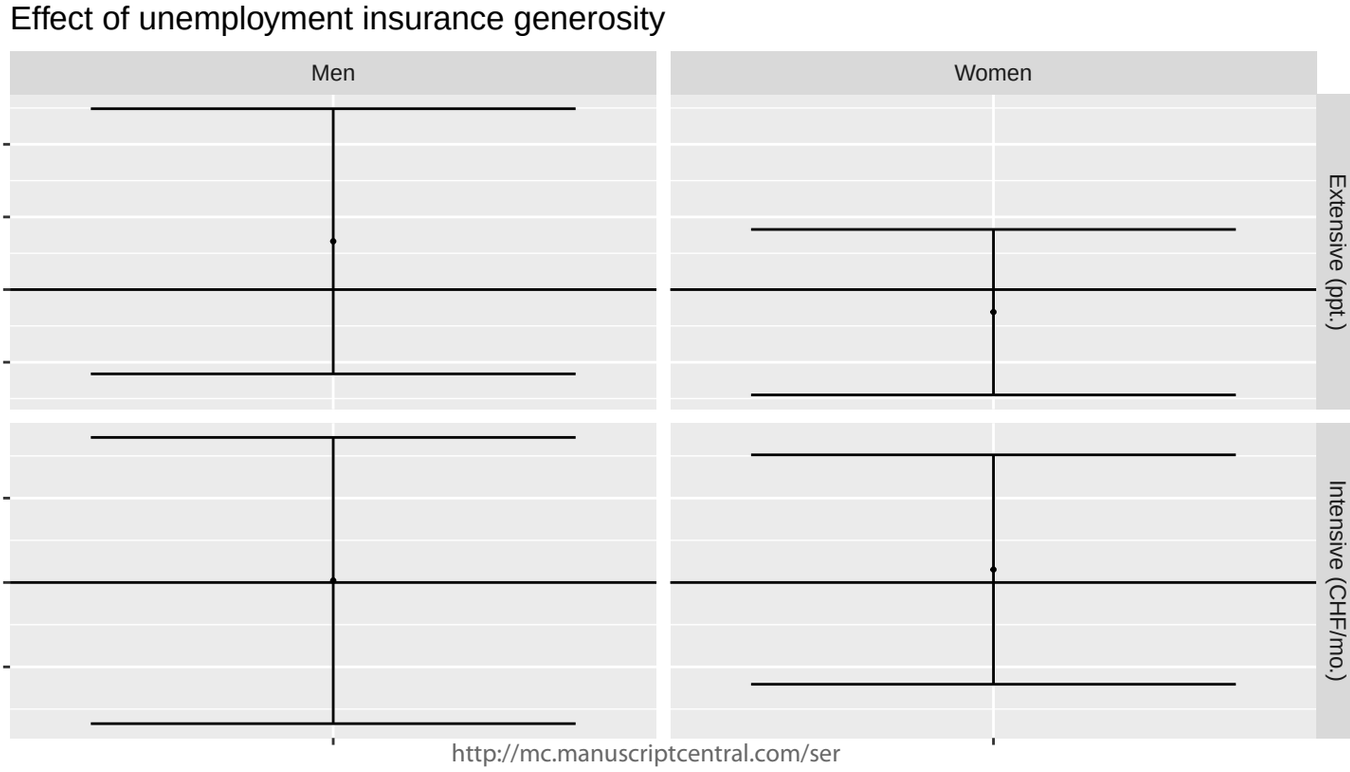
By household income tercile



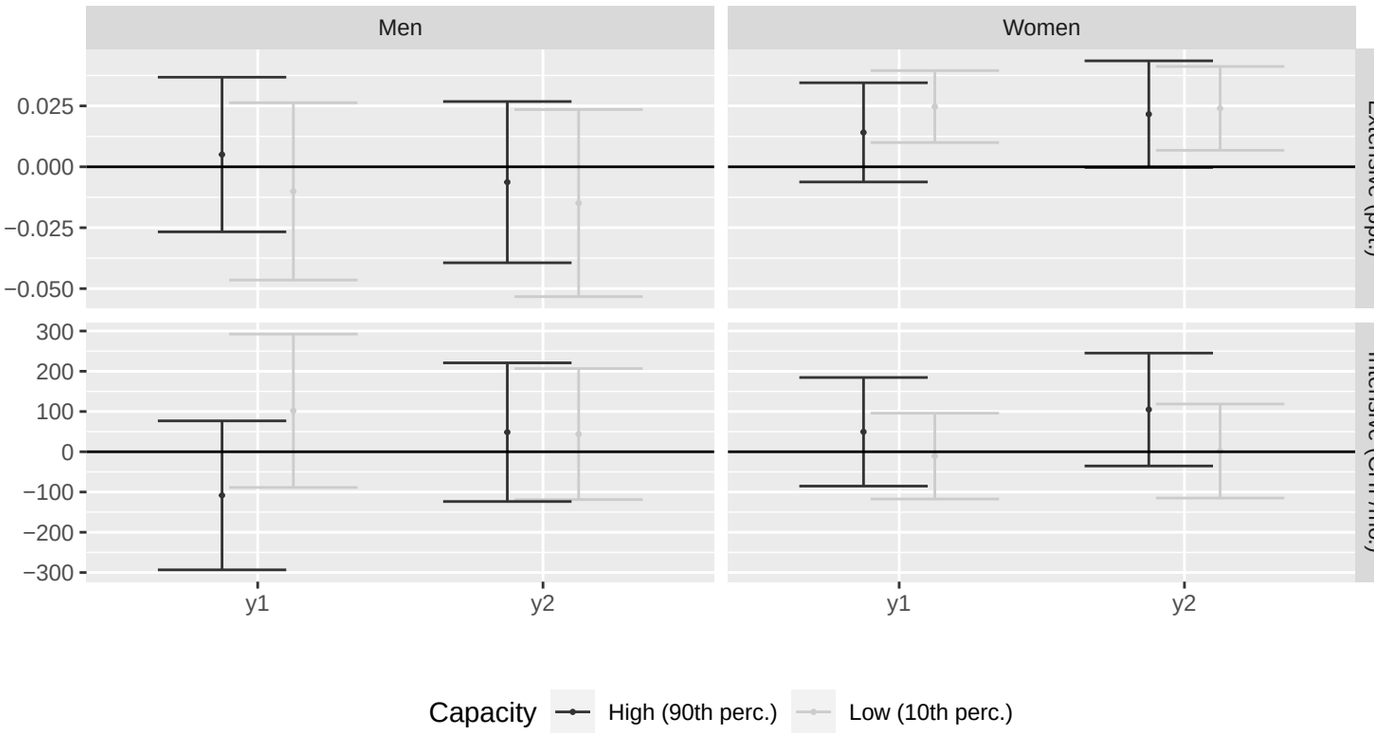
By relative income contribution and household income tercile



Effect of unemployment insurance generosity

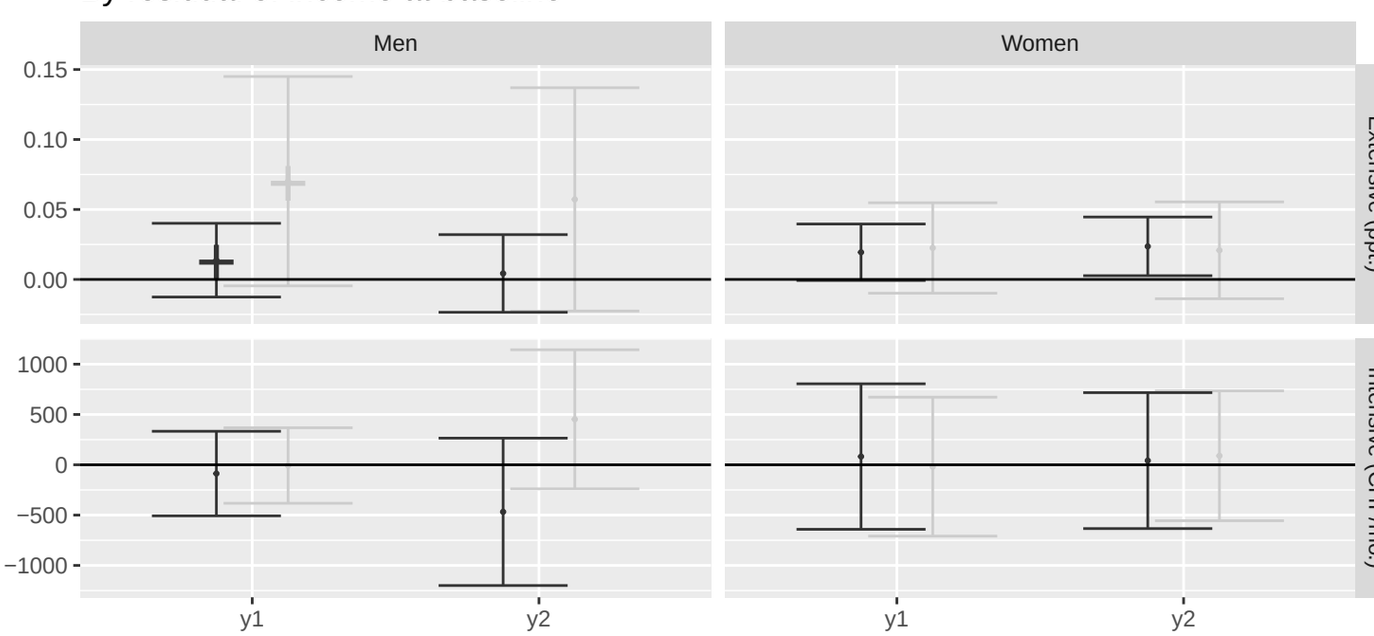


By difference current earnings vs. past highest earnings



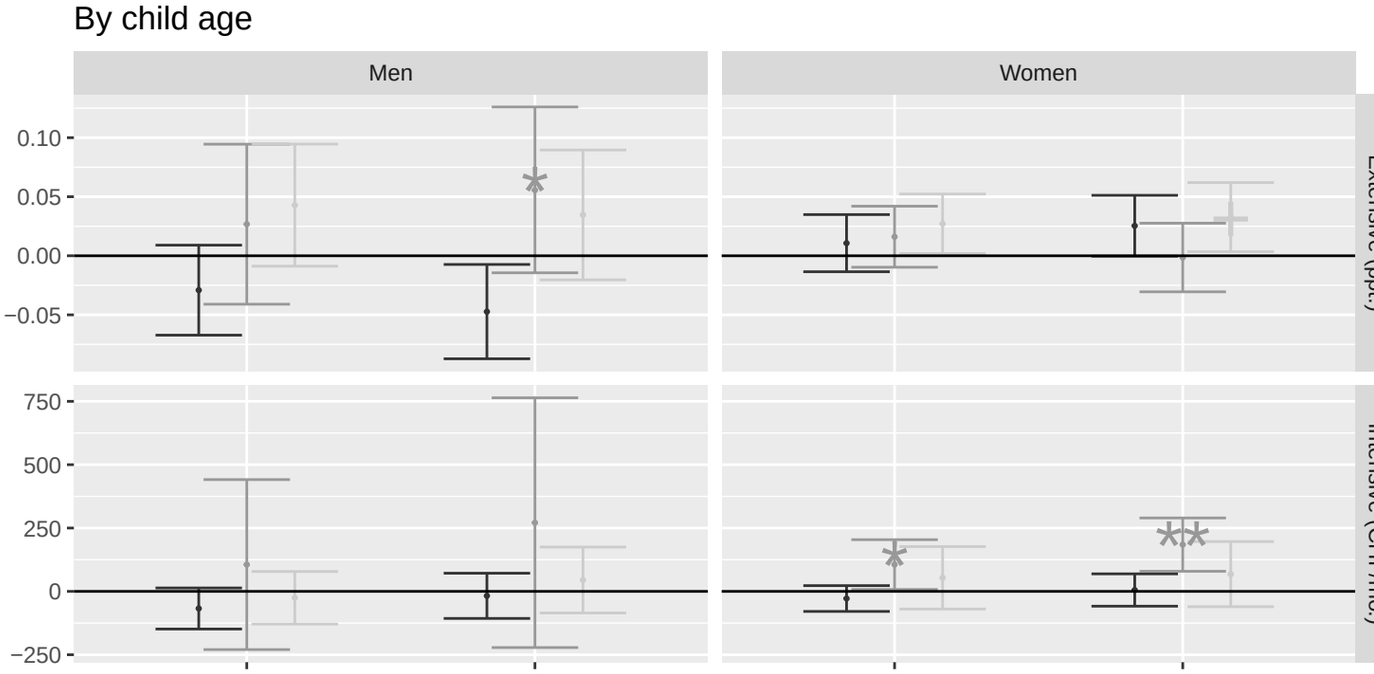
Capacity — High (90th perc.) — Low (10th perc.)

By residual of income at baseline



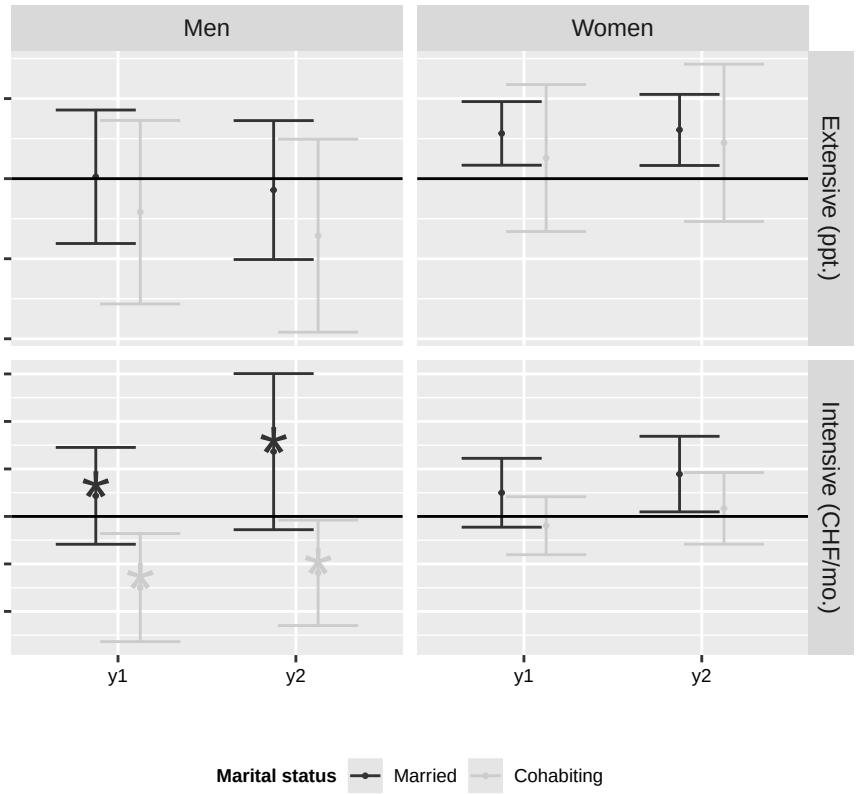
Capacity — High (90th perc.) — Low (10th perc.)

By child age



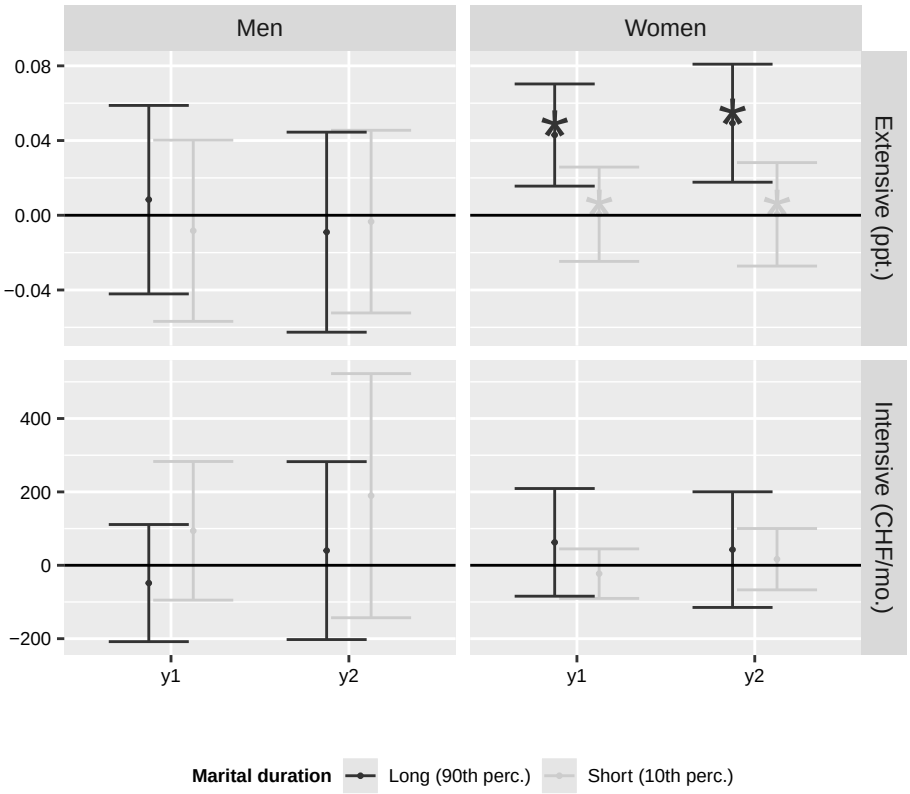
Child age — No children — Child 0−3 — Child over 3

By marital status



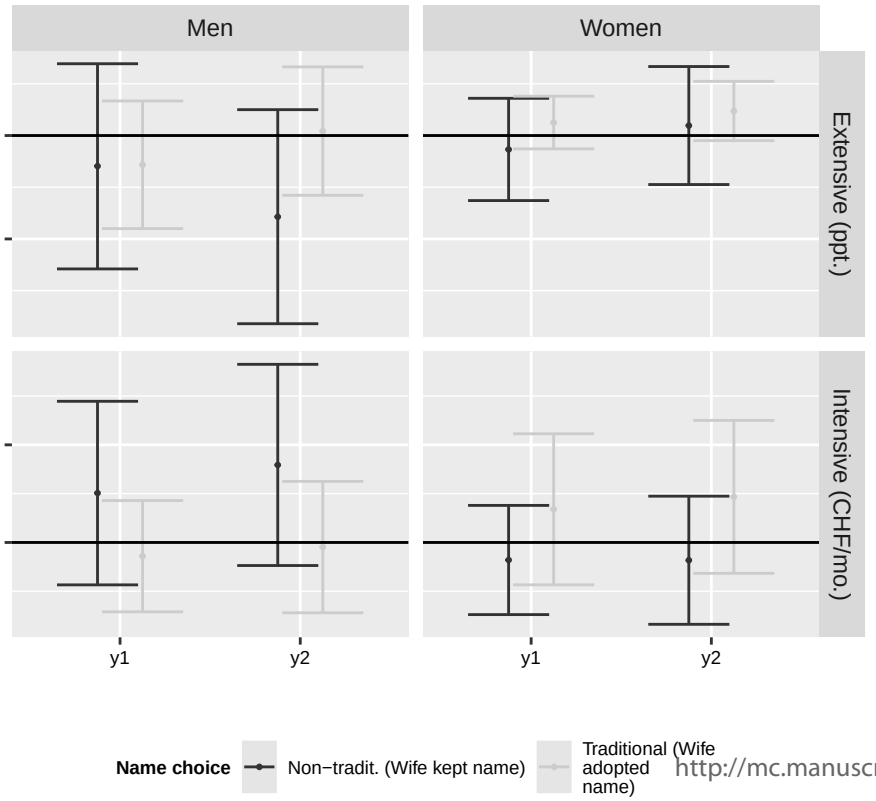
By marital duration

Only married couples



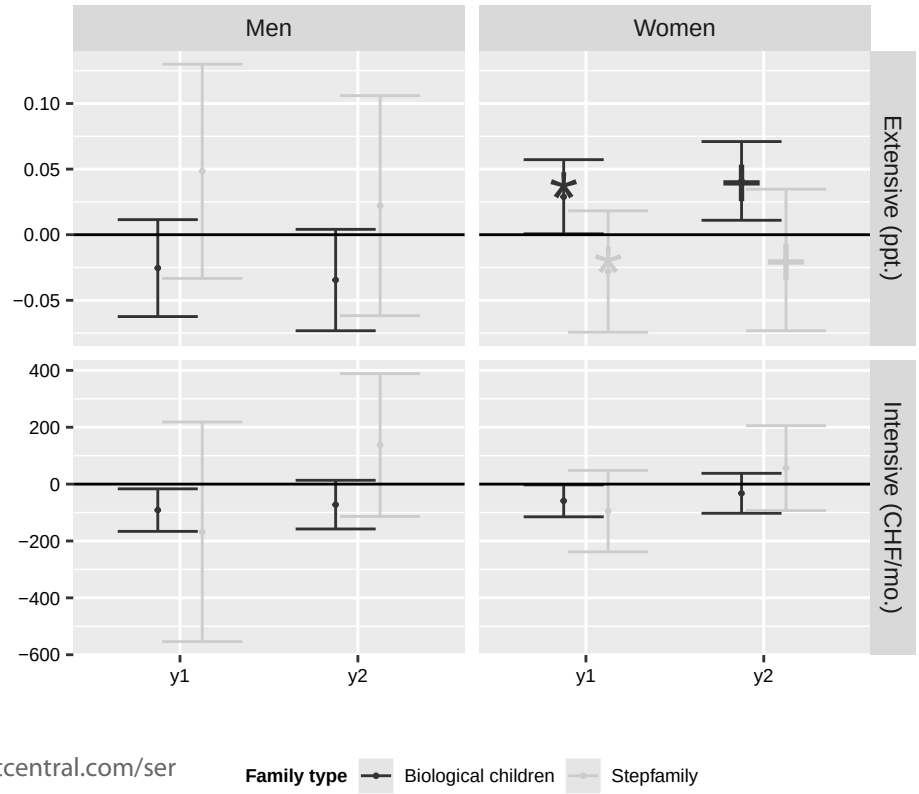
By name choice

Only couples married before 2013



By family type

Only couples with children

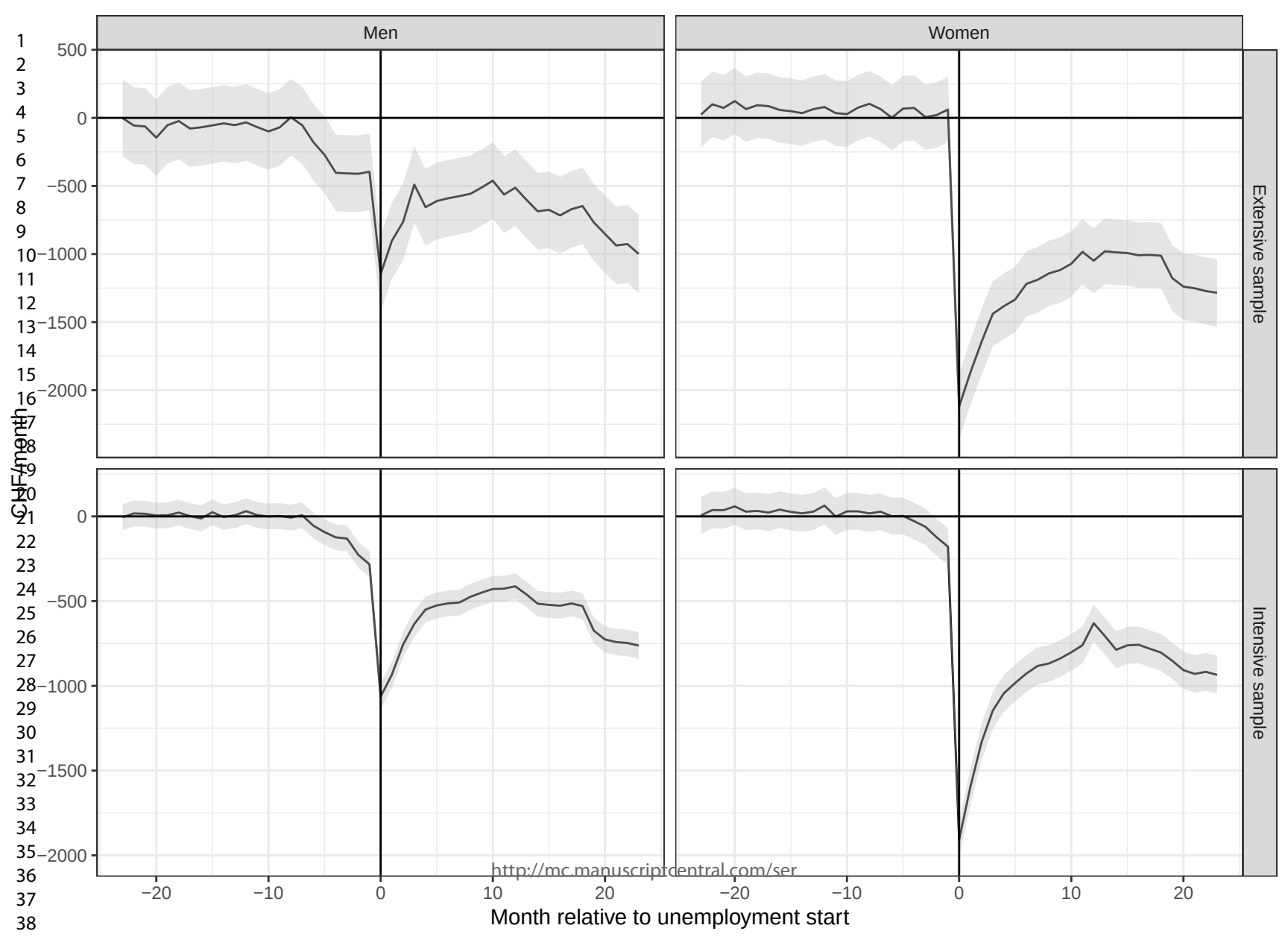


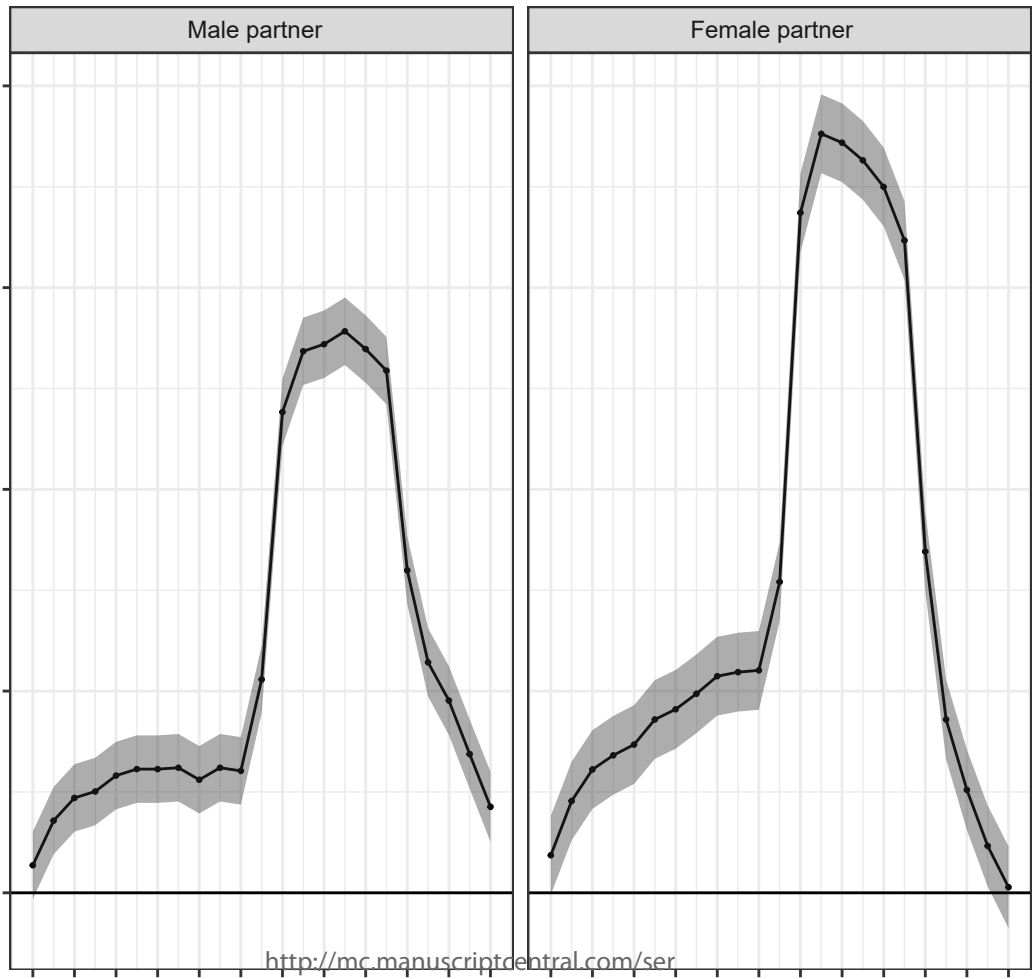
Concept	*Measure*	*Operationalization*
Treatment		
	Treated versus control group	Treated: unemployment spell starting 06.2012 – 05.2015 Control: future unemployment spell starting 06.2015 – 05.2018 with fictious unemployment spell = actual date of unemployment spell set 3 years back
Outcomes		
	Level/change in household income	Both partners' average monthly income from: employment/self-employment and social insurance; Level: months -24 to 23; Change: months -12 to -7 versus year 1 & 2
	Extensive outcome: labor market entry among the non-employed partners	Employment by partners with zero earned income in month -7; Level: months -24:23; Change months -12 to -7 versus year 1 & 2
	Intensive outcome: income among employed partners	Partner's monthly earned income; Level: months -24 to 23; Change months -12 to -7 versus year 1 & 2
Moderator: Need		
	Equivalized household income before unemployment	Household income tercile (earnings and social insurance both partners) months -12 to -7 divided by square root of household size
	Reliance on lost income	Relative contribution of unemployed partner's earned income to household income in months -12 to -7 (>=66% versus <66%)
	Unemployment insurance	Maximum benefit duration 1 versus 1.5 years (12-17 versus 18-24 contribution months)
Moderator: Capacity		
	Earnings capacity, difference to past maximum earnings	Difference between maximum monthly earnings in months -120 to -7 versus average monthly earnings in months -12 to -7
	Earnings capacity, difference to predicted earnings	Residual of predicted income in months -12 to -7 (prediction based on control sample with the predictors:, marital status, maximum benefit duration, relative contribution unemployed partner's to household income, gender, family type, household income, date of unemployment spell, number of children, region, years since last move, size of municipality, percentage employed in municipality, education/occupation of unemployed partner, household size, and for both partners: age, citizenship, earnings months -40 to -13)
	Child age	None, youngest < 4, youngest >= 4
Moderator: Willingness		
	Marital status	Married versus cohabiting
	Stepfamily	No children under 18, shared biological children, stepchildren
	Marital duration	Years since marriage
	Name change in marriage	Wife adopted husband's name versus hyphenated (traditional) name
Control variables		
	Citizenship (balancing and regression)	Both Swiss, only unemployed Swiss, only partner Swiss, neither Swiss
	Household size (balancing and regression)	Number of household members at unemployment start
	Earned income of both partners (balancing)	Income from employment or self-employment partner and unemployed months -120 to- 81, -80 to -41, -40 to -13 and -12 to -7 before unemployment (avg CHF/mo.)
	Location (balancing and regression)	Region
	Size of the municipality (balancing and regression)	Population (2014)
	Duration in the municipality (balancing and regression)	Since when household resides in current municipality
	Employment to population ratio (balancing and regression)	Number of jobs divided by number of inhabitants in municipality (measured in 2014)
	Education unemployed partner (balancing and regression)	Low, medium, high
	Occupation unemployed partner (balancing and regression)	First level ISCO code
	Working hours (balancing and regression)	Weekly hours by unemployed partner before unemployment
	Date of (fictional) unemployment spell (balancing and regression)	Date of unemployment spell (3 years back for control group)
	Number of children (balancing)	Unemployed and partner's number of children
	Young child (balancing)	Presence of child aged below 4

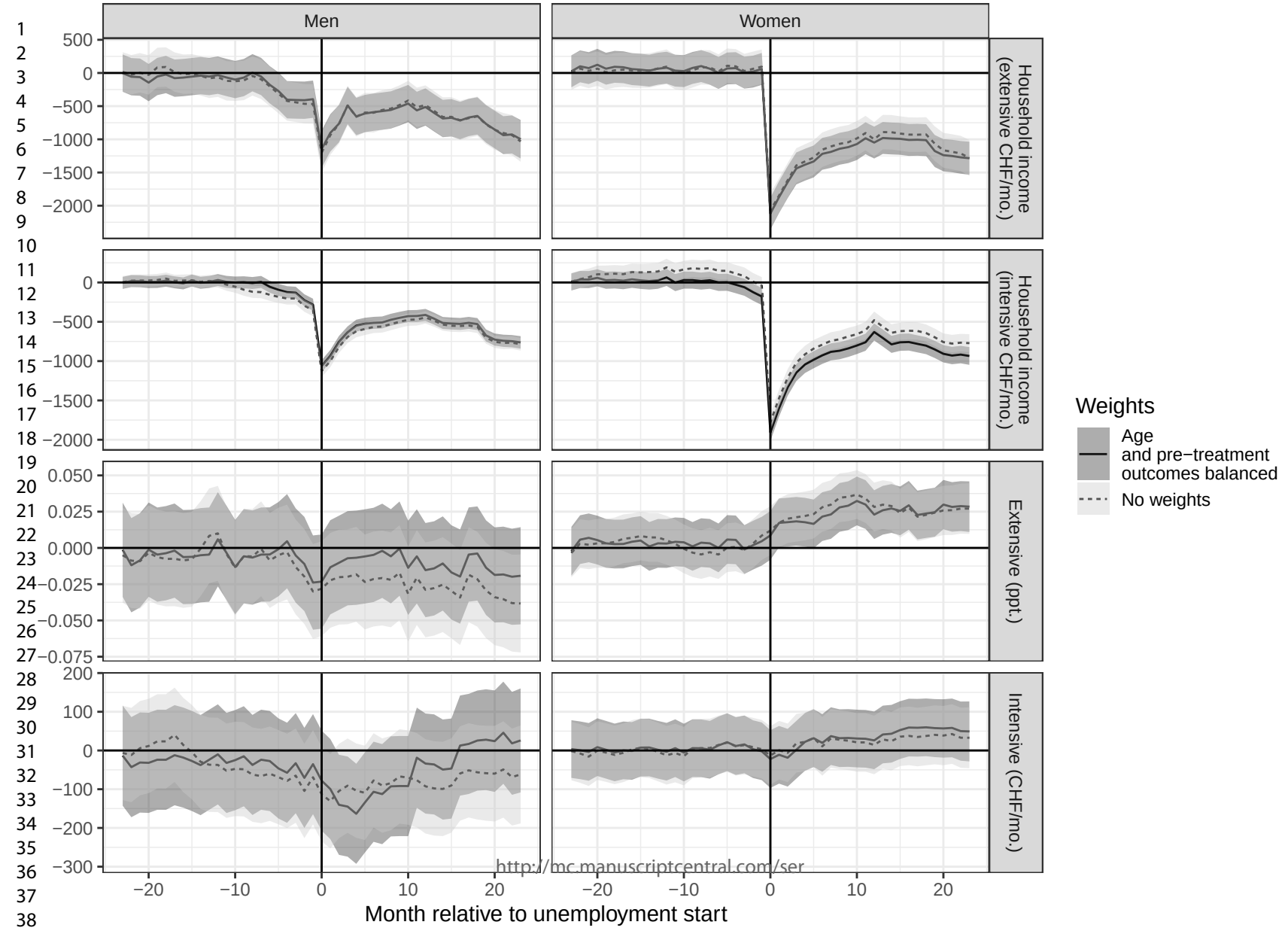
Age of both partners (balancing and regression)	Age in years

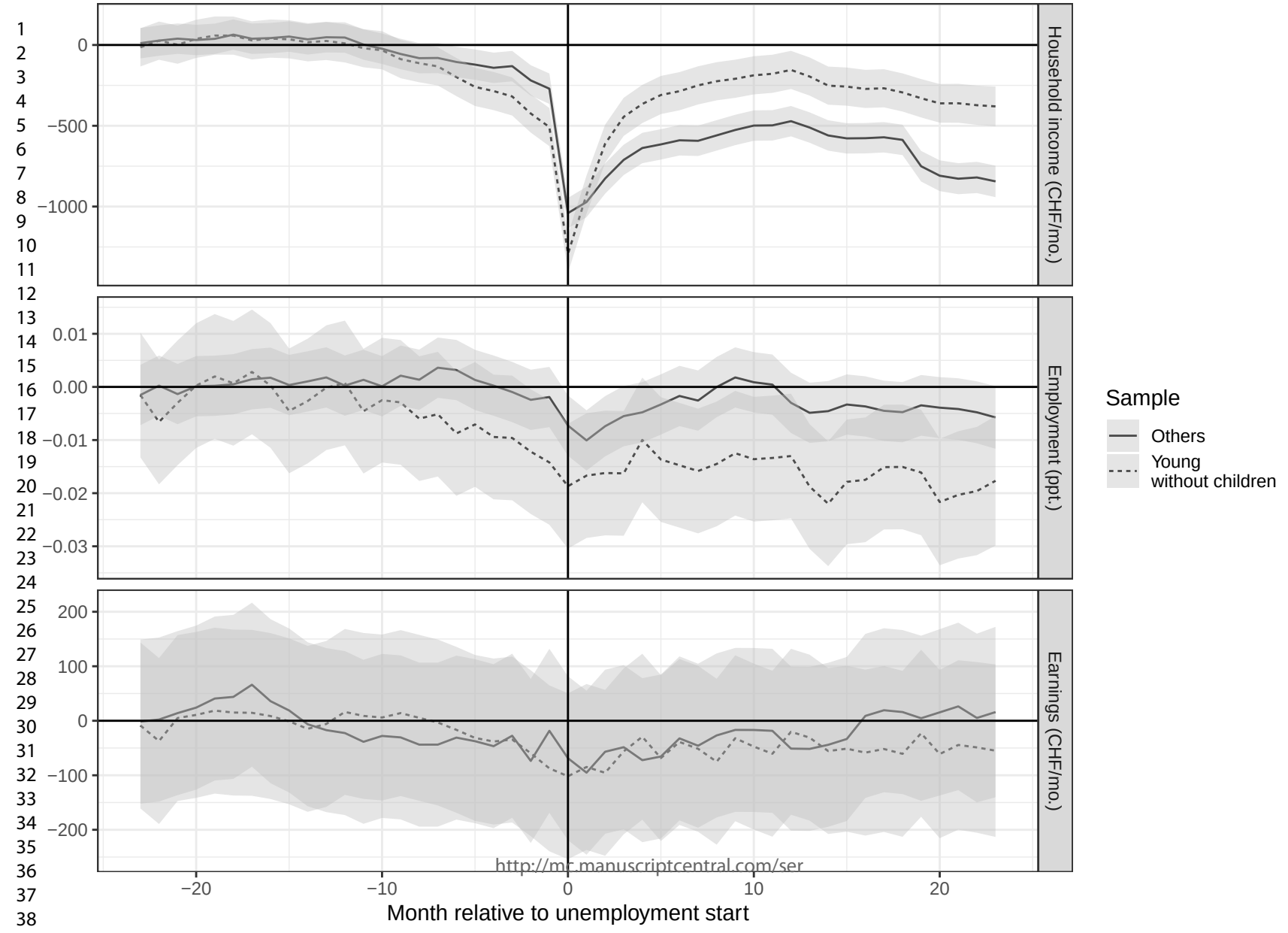
	Male partners		*Female partners*	
	Treated	*Controls*	*Treated*	*Controls*
Pre-unemp. equivalized income	6757	6642 ***	6073	5974 ***
Unemployed's income contribution				
Between one and two thirds	0.53	0.52 ***	0.45	0.47 ***
More than two thirds	0.09	0.09	0.44	0.43 ***
Less than a third	0.37	0.39 ***	0.11	0.1 **
Married (%)	0.61	0.63 ***	0.71	0.72
Region (%)				
Lake Geneva	0.23	0.24 ***	0.24	0.25 ***
Central lowlands	0.22	0.22	0.2	0.2
Northwest	0.14	0.13	0.14	0.13 ***
Zurich	0.19	0.19	0.2	0.2
East	0.12	0.11 *	0.12	0.11 **
Central	0.07	0.06 *	0.07	0.07
Ticino	0.04	0.04 *	0.04	0.04 **
Family type (%)				
Childless	0.51	0.47 ***	0.4	0.41 ***
Biological children	0.39	0.43 ***	0.52	0.5 ***
Stepfamilies	0.09	0.1	0.08	0.09 *
Household size	2.8	2.9 ***	3.1	3.1 ***
Age of youngest child (if parents, yrs)	3.8	4.1 ***	3.6	4 ***
Population size municipality	45656	47739 **	43697	45124 *
Employed population in municipality (%)	0.63	0.63	0.62	0.62 *
Duration of marriage (if married, yrs)	8.4	8.3 *	8.6	8.8 ***
Traditional name (if married 1998–2012)	0.79	0.77 *	0.8	0.79 ***
N	*28961*	*34372*	*36079*	*42008*

	Partner				*Unemployed*			
	Men		*Women*		*Men*		*Women*	
	Treated	*Controls*	*Treated*	*Controls*	*Treated*	*Controls*	*Treated*	*Controls*
Income y. bef. unempl. (CHF/month)	6245	6288	3166	3185	4233	4163 **	6569	6410 ***
Employed y. bef. unempl. (%)	0.9	0.89 *	0.75	0.75	0.94	0.93 ***	0.93	0.93 ***
Hours (%, 100= 42h/week)					80	81.8 ***	96.9	97
Age at UI start	37.4	38.4 ***	35.2	36 ***	38	36.3 ***	40.4	38.4 ***
Citizenship (%)								
Swiss	0.51	0.5	0.47	0.45 ***	0.5	0.48 ***	0.46	0.43 ***
Neighboring country	0.13	0.14	0.11	0.11	0.12	0.13 **	0.13	0.14 ***
Non-neighboring country	0.36	0.36	0.42	0.44 ***	0.38	0.4 ***	0.41	0.43 ***
Earnings capacity, past (CHF/month)	2780	3014 **	2115	2137				
Earnings capacity, predicted resid. (CHF/month)	69.5	33.3	67.7	5.3 ***				
Education (%)								
Tertiary					0.21	0.22 ***	0.22	0.21
Upper-secondary					0.46	0.46 ***	0.41	0.41 ***
Less than vocational					0.19	0.2 ***	0.23	0.24 ***
Occupation (%)								
Classes 1/2 (high)					0.24	0.23 **	0.31	0.29 ***
Classes 3-6 (middle)					0.6	0.6 ***	0.3	0.3 ***
Classes 7-9 (low)					0.16	0.16 ***	0.39	0.4
> 17 mo. UI contributions					0.88	0.81 ***	0.9	0.8 ***





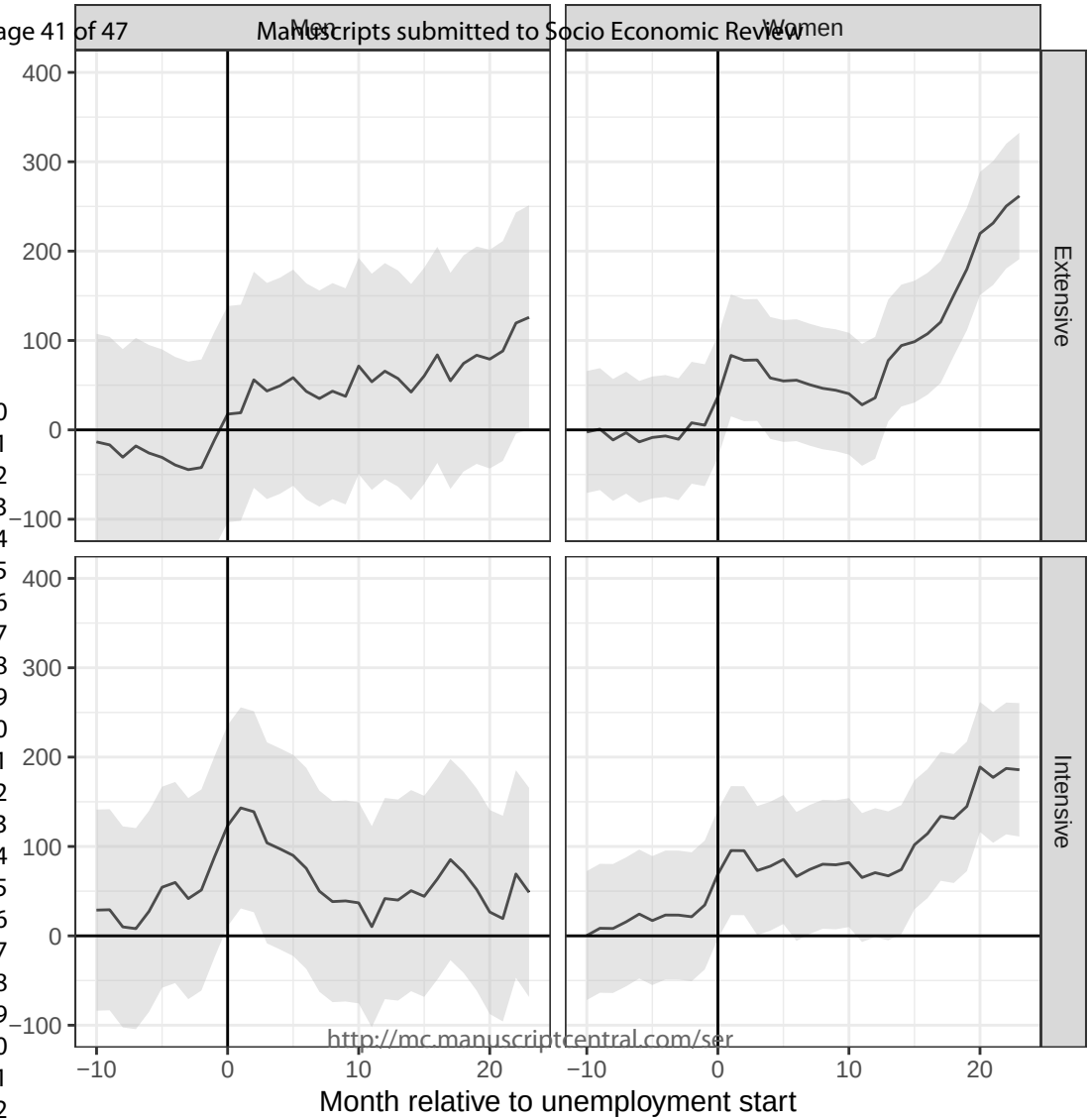


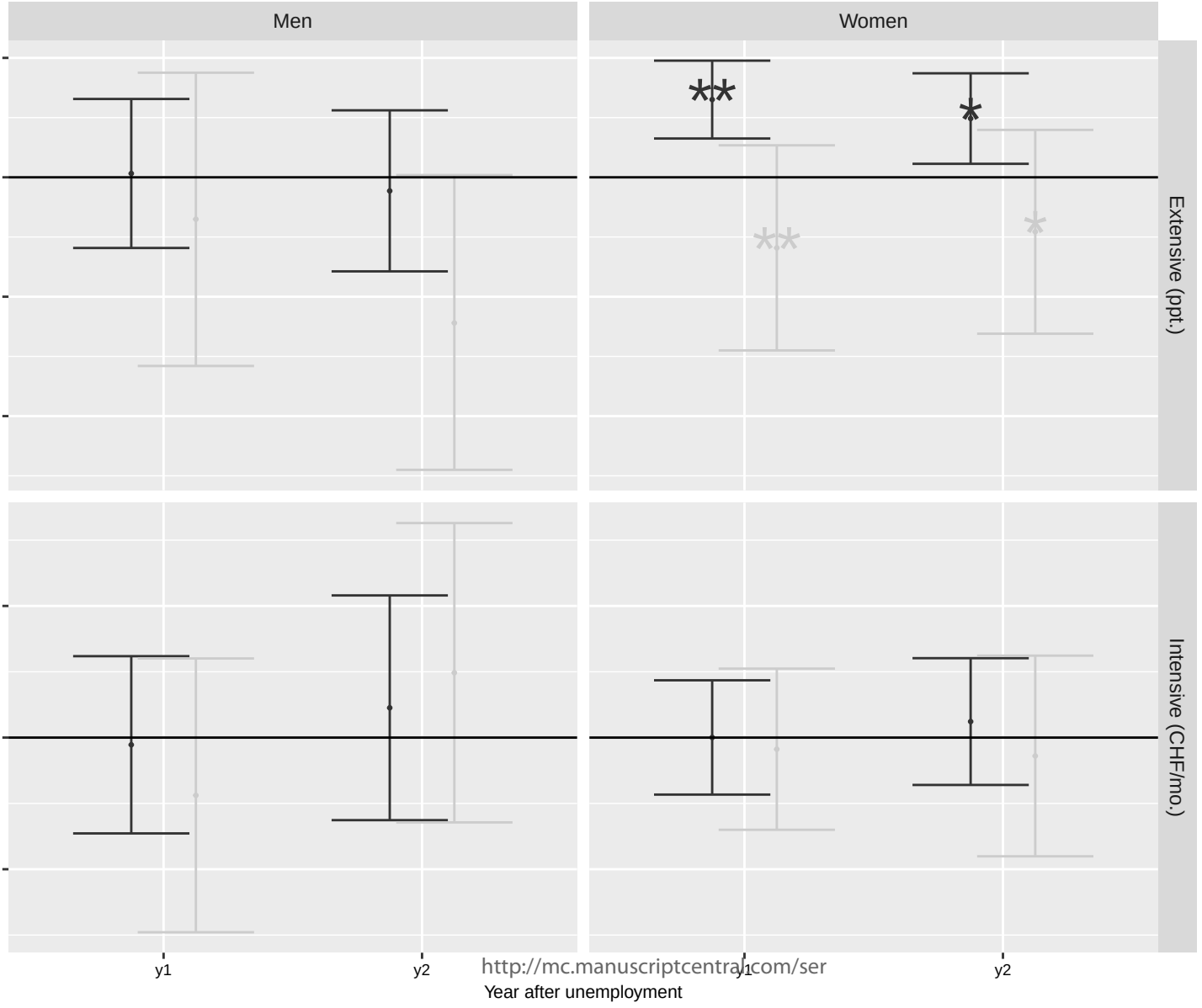


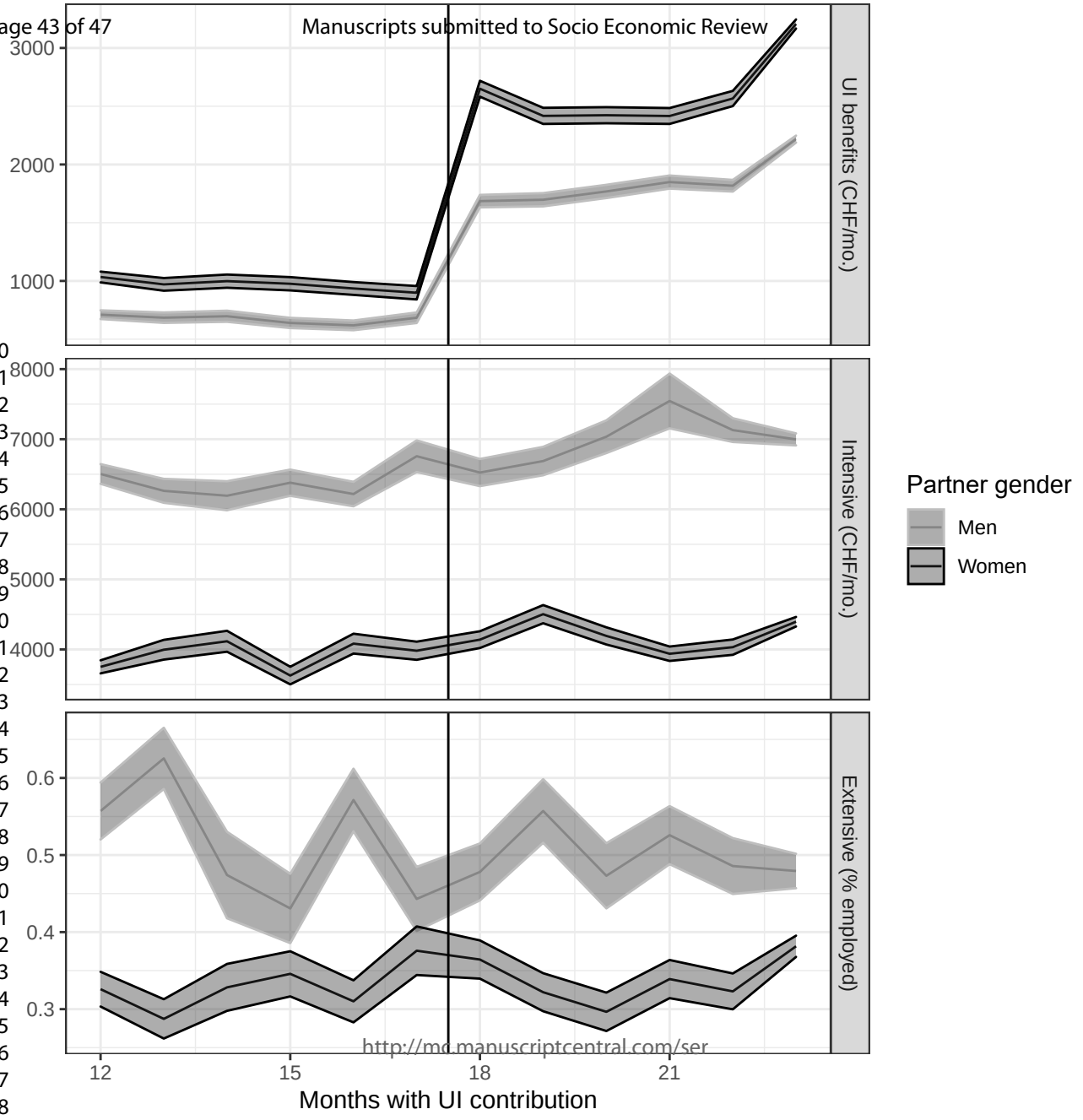
		Extensive		Inter
		Male partners	Female partners	Male partners
By capacity (residual at baseline)	Low (1st decile)	−0.12*	−0.03	−320.5
	High (9th decile)	−0.02*	0	402.1
By capacity (current earnings vs. Past highest)	Low (1st decile)	0	0	−352.6
	High (9th decile)	0	−0.02	190.1
By children/child age	Child 0−3	−0.03	0	−166.6
	Child > 3	−0.01	0	−21.99
	No children	0.03	−0.02	18.23
By marital duration	Short (1st decile)	0	−0.02	−93.76
	Long (9th decile)	0.01	−0.01	46.12
By household income	1st tercile	−0.01	−0.01	−3.45
	2nd tercile	0	−0.01	−65.66
	3rd tercile	0.04	−0.01	−2.21
By marital status	Cohabiting	0	−0.01	67.48
	Married	0	−0.01	−77.27
By name choice	Non−tradit. (Wife kept name)	0.05	0	−151.4
	Traditional (Wife adopted name)	−0.02	−0.02	2.96
By social insurance entry	No	0.01	−0.02	−90.54
	Yes	0.08	−0.04	−326.4
By family type	Biological children	0.01	−0.02*	−21.43
	Stepfamily	−0.02	0.03	1.16
By household & relative income	1st terc.: Primary earner (>66%)			−299.4
	1st terc.: Secondary/equal earner			57.2
	2nd terc.: Primary earner (>66%)			−212.2
	2nd terc.: Secondary/equal earner			−29.56
	3rd terc.: Primary earner (>66%)			−142
	3rd terc.: Secondary/equal earner			21.76

nsive

Female partners
−384.7
432.6
14.65
−2
−15.4
−18
13.41
74.18*
−18.34
35.39
−28.43
18.12
−39.49
28.53
119.5*
−34.11
40.26
−135.3
−4
2.9
51.22
65.3
−56.66
−15.19
109.3
15.41







	Extensive sample (men)	Extensive sample (women)	Intensive sample (men)	Intensive sample (women)
Intercept	0.456 ***	0.264 ***	6390.750 ***	3732.796 ***
	(0.008)	(0.004)	(32.980)	(19.006)
Controls:				
Month -23 (ref. mo. -24)	-0.008	-0.005	28.660	26.256
	(0.012)	(0.006)	(46.641)	(26.879)
Month -22	-0.009	-0.014 *	88.817	59.867 *
	(0.012)	(0.006)	(46.641)	(26.879)
Month -21	-0.025 *	-0.022 ***	131.241 **	98.483 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -20	-0.046 ***	-0.027 ***	175.202 ***	121.551 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -19	-0.053 ***	-0.034 ***	221.705 ***	153.575 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -18	-0.060 ***	-0.036 ***	257.654 ***	180.514 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -17	-0.071 ***	-0.040 ***	295.485 ***	201.094 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -16	-0.079 ***	-0.051 ***	310.546 ***	228.929 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -15	-0.091 ***	-0.063 ***	348.069 ***	243.673 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -14	-0.104 ***	-0.073 ***	371.038 ***	255.864 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -13	-0.124 ***	-0.092 ***	379.707 ***	279.576 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -12	-0.168 ***	-0.111 ***	398.320 ***	311.314 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -11	-0.199 ***	-0.137 ***	434.791 ***	331.199 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -10	-0.239 ***	-0.158 ***	474.081 ***	379.308 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -9	-0.294 ***	-0.184 ***	526.892 ***	416.354 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -8	-0.352 ***	-0.218 ***	616.131 ***	452.917 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -7	-0.456 ***	-0.264 ***	681.551 ***	515.665 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -6	-0.347 ***	-0.205 ***	653.725 ***	478.653 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -5	-0.276 ***	-0.174 ***	639.360 ***	455.720 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -4	-0.222 ***	-0.145 ***	640.166 ***	449.208 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -3	-0.170 ***	-0.113 ***	610.882 ***	435.284 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -2	-0.134 ***	-0.093 ***	638.810 ***	420.348 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month -1	-0.100 ***	-0.078 ***	594.980 ***	409.975 ***
	(0.012)	(0.006)	(46.641)	(26.879)

Month of unemployment	-0.076 ***	-0.055 ***	600.295 ***	406.401 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 1	-0.059 ***	-0.042 ***	613.442 ***	393.855 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 2	-0.041 ***	-0.024 ***	672.350 ***	409.258 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 3	-0.032 **	-0.011	692.099 ***	400.109 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 4	-0.024 *	0.003	736.208 ***	380.643 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 5	-0.019	0.013 *	726.130 ***	382.174 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 6	0.000	0.023 ***	715.924 ***	388.729 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 7	0.009	0.032 ***	725.067 ***	373.383 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 8	0.028 *	0.038 ***	714.769 ***	377.944 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 9	0.036 **	0.047 ***	704.984 ***	366.475 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 10	0.049 ***	0.051 ***	694.045 ***	351.439 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 11	0.048 ***	0.058 ***	621.229 ***	341.526 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 12	0.054 ***	0.069 ***	613.607 ***	330.597 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 13	0.057 ***	0.074 ***	604.007 ***	324.262 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 14	0.053 ***	0.077 ***	620.025 ***	333.247 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 15	0.056 ***	0.083 ***	641.353 ***	330.431 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 16	0.054 ***	0.086 ***	608.700 ***	328.677 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 17	0.045 ***	0.089 ***	616.821 ***	327.892 ***
	(0.012)	(0.006)	(46.641)	(26.879)
Month 18	0.048 ***	0.097 ***	609.996 ***	333.467 ***
	(0.012)	(0.006)	(46.652)	(26.882)
Month 19	0.067 ***	0.102 ***	606.532 ***	330.234 ***
	(0.012)	(0.006)	(46.944)	(27.020)
Month 20	0.076 ***	0.103 ***	624.926 ***	332.236 ***
	(0.012)	(0.006)	(47.274)	(27.153)
Month 21	0.083 ***	0.109 ***	590.717 ***	325.340 ***
	(0.012)	(0.006)	(47.573)	(27.321)
Month 22	0.082 ***	0.110 ***	602.584 ***	316.223 ***
	(0.012)	(0.006)	(47.941)	(27.503)
Month 23	0.082 ***	0.111 ***	603.152 ***	326.215 ***
	(0.012)	(0.006)	(48.421)	(27.871)
Difference treated group				
(vs. control group) in mo 24	0.005	-0.003	23.877	-1.832
	(0.012)	(0.006)	(46.641)	(26.879)

DID month -23	-0.001	-0.002	-13.351	3.674
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -22	-0.012	0.006	-43.025	0.511
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -21	-0.009	0.007	-31.092	-3.632
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -20	-0.001	0.005	-31.918	8.606
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -19	-0.005	0.003	-23.877	1.832
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -18	-0.004	0.003	-23.995	-5.064
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -17	-0.002	0.003	-12.217	0.248
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -16	-0.006	0.004	-18.301	-1.164
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -15	-0.006	0.005	-27.138	7.422
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -14	-0.005	0.001	-37.734	7.717
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -13	-0.005	0.003	-23.877	1.832
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -12	0.006	0.003	-10.000	-3.173
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -11	-0.003	0.004	-32.136	6.003
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -10	-0.013	0.004	-24.940	-5.411
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -9	-0.006	0.001	-14.966	6.032
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -8	-0.007	0.004	-37.344	5.708
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -7	-0.005	0.003	-23.877	1.832
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -6	-0.005	0.000	-27.234	13.073
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -5	-0.001	0.006	-46.292	21.380
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -4	0.005	0.006	-57.516	11.557
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -3	-0.005	-0.001	-32.782	15.723
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -2	-0.011	0.002	-70.714	3.363
	(0.017)	(0.009)	(65.960)	(38.013)
DID month -1	-0.024	0.005	-35.297	-2.092
	(0.017)	(0.009)	(65.960)	(38.013)
DID month of unemployment	-0.023	0.009	-77.916	-22.174
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 1	-0.013	0.017 *	-99.621	-11.099
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 2	-0.010	0.018 *	-140.286 *	-18.690

	(0.017)	(0.009)	(65.960)	(38.013)
DID month 3	-0.007	0.018 *	-144.843 *	1.814
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 4	-0.007	0.018 *	-163.472 *	22.272
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 5	-0.006	0.017	-134.296 *	31.845
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 6	-0.005	0.022 *	-106.575	19.471
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 7	-0.002	0.023 **	-112.677	37.111
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 8	-0.006	0.028 **	-92.671	31.785
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 9	-0.000	0.029 ***	-91.849	32.342
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 10	-0.014	0.032 ***	-91.928	30.886
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 11	-0.006	0.030 ***	-18.598	30.212
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 12	-0.015	0.023 **	-33.762	26.034
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 13	-0.014	0.026 **	-36.039	41.291
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 14	-0.011	0.027 **	-49.239	43.282
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 15	-0.017	0.026 **	-46.662	52.793
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 16	-0.020	0.029 ***	12.704	59.169
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 17	-0.005	0.023 **	16.920	58.676
	(0.017)	(0.009)	(65.960)	(38.013)
DID month 18	-0.004	0.024 **	25.644	59.800
	(0.017)	(0.009)	(65.968)	(38.015)
DID month 19	-0.014	0.025 **	27.892	57.813
	(0.017)	(0.009)	(66.387)	(38.226)
DID month 20	-0.019	0.030 ***	24.045	56.944
	(0.017)	(0.009)	(66.868)	(38.451)
DID month 21	-0.018	0.028 **	45.890	58.294
	(0.017)	(0.009)	(67.298)	(38.696)
DID month 22	-0.020	0.029 **	18.422	50.011
	(0.017)	(0.009)	(67.781)	(38.973)
DID month 23	-0.019	0.028 **	25.978	49.227
	(0.017)	(0.009)	(68.478)	(39.497)
N	308521	905997	2706722	2813241
R2	0.068	0.056	0.001	0.001
logLik	-219853.249	-536041.494	-27326148.048	-26890104.891
AIC	439900.498	1072276.988	54652490.096	53780403.781

*** p < 0.001; ** p < 0.01; * p < 0.05.