Economic Effects of Social Protection

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3 The Added Worker Effect in the Netherlands Before and During the Great Recession

Abstract

We study the added worker effect in the Netherlands before and during the Great Recession. We use a large administrative panel dataset for the period 1999–2015 and employ differences-in-differences to estimate the effect of male partner's unemployment shock on female partner's income. We find a modest added worker effect of 2-5% of the male partner's income loss. The added worker effect disappeared in the beginning of the Great Recession, but resurfaced a few years later. Furthermore, we show that self-employment has become more important in dealing with unemployment shocks.

The chapter is co-authored by Egbert Jongen en Pierre Koning. We are grateful for comments and suggestions by seminar and conference participants at CPB Netherlands Bureau for Economic Policy Analysis and the IIPF 2018 Conference in Tampere. Remaining errors are my own.

3.1 Introduction

Since the start of the Great Recession, policymakers and academics have shown increased interest in the effect of unemployment shocks on the labor supply of partners of the unemployed workers – also known as the added worker effect (henceforth AWE). While the empirical literature generally finds the AWE to be small – see e.g. Hardoy and Schøne (2014), Halla et al. (2018) and Bredtmann et al. (2018) for recent contributions – a pertaining question is whether the AWE has grown in importance in the years following the onset of the Great Recession in 2008. With markedly higher unemployment risks and larger shocks in wage earnings that have occurred in this period, one may expect the AWE to have become more sizable. At the same time, however, increases in labor supply may to a lesser extent have been translated into more employment during an economic downturn and high unemployment rates may have discouraged partners from entering the labor market. From a theoretical perspective, the overall effect of changes in business cycles on the AWE is thus ambiguous.

This paper studies how the AWE is related to changes over the business cycle in the Netherlands during the period 2003-2015. For this purpose, we use administrative data from the Labour Market Panel of Statistics Netherlands. The Labour Market Panel tracks the labor market histories of 1.8 million individuals for the period 1999-2015, as well as their social security records and profits from self-employment. In addition, the panel contains information on demographics, household characteristics and education levels of individuals.

We contribute to the literature by investigating how AWE changed over the business cycle in the Netherlands, using data that cover periods before and during the Great Recession. We study the AWE for couples who are confronted with large and persistent income shocks in comparison with other studies on the AWE. These larger income shocks follow both from the Great Recession and from studying the effects of entering unemployment insurance (UI) rather than studying the effects of mass layoffs.[1] We further

[1] In contrast with studies on mass layoffs, we do not study the effects for households that were displaced but never entered UI.

shed light on two distinctive features of the Dutch labour market. First, we assess the importance of the substantial and increasing share of self-employed that may have provided increasing opportunities to mitigate partners' income shocks. Second, the Netherlands is a country that has seen a steep rise in the employment rate of women, while remaining the country with the highest share of part-time employment in the OECD. In this context, it is interesting to study the AWE at the extensive and intensive margin, and potential changes in the role of these margins over time.

Our research strategy compares women with male partners who became unemployed to women with male partners that remained employed in a given year. Using a differences-in-differences design with individual fixed effects, we estimate the impact of a male partners unemployment shock in a particular year on the earnings of both partners, the employment of the female partner, income from unemployment insurance (UI) and other social benefits, and profits from self-employment – all measured over a time window from 4 years before entering UI, the year of entering UI and 3 years after entering UI. With these results, we assess the importance of a rich set of income sources that may mitigate the drop in household income due to the job loss of the male partner. By taking different reference years for the unemployment shocks occurring in our sample, we assess how the effects vary over the business cycle and over time more broadly.

Throughout the empirical analysis, a key challenge is to construct treatment and control groups that have common time effects. For this reason, we select a sample of individuals between the age of 25 and 55 who received annual earnings from labor of at least 5,000 euro and no income from benefits in the 4 years preceding the possible receipt of UI benefits. As such, each yearly cohort consists of individuals with relatively stable positions on the labour market for which income shocks are plausibly exogenous. In addition, the inclusion of time dummies in the two years before becoming unemployed allows us to conduct placebo analyses on the assumption of common time effects and whether or not we observe any anticipation effects.

Our main findings are as follows. First, we find that the unemployment shock of a male partner, causing a loss in gross income of 20 to 30 thousand euro, has a small, positive and statistically significant AWE of 2-5% (500-1,000 euros). This is comparable to the AWE estimates of Juhn and Potter (2007), Hardoy and Schøne (2014), Starr (2014), Halla et al. (2018) and Bredtmann et al. (2018).[2] Second, the AWE that we estimate largely disappears during the first years of the Great Recession (2008-2009). While this may appear at odds with earlier research in this field – see e.g. Mattingly and Smith (2010) and Bredtmann et al. (2018) – it is in line with Halla et al. (2018) who find AWE on earnings to be confined to districts with low unemployment rates.[3] Third, our findings point to the existence of both intensive and extensive margin added worker effects. As such, we add to a literature that provides mixed evidence on the importance of intensive and extensive margin effects – see e.g. Hardoy and Schøne (2014), Halla et al. (2018) and Bredtmann et al. (2018). The decrease in the AWE at the start of the Great Recession is mostly driven by decreases at the intensive margin, i.e. less additional hours worked by partners that were already employed. Finally, we find an AWE of about 2% (500 euro) of profits from self-employment of the female partner and the treatment effect on male partner's profits more than doubled from about 2,000 euro 3 years after entering UI in 2004 to about 4,500 euro 3 years after entering UI in 2012.

The outline of the paper is as follows. Section 3.2 gives background information on the Dutch labor market and the UI system. Section 3.3 considers the empirical methodology. Section 3.4 discusses the dataset and gives descriptive statistics. Section 3.5 presents the estimation results. Section 3.6 concludes.

[2]Table A.3.1 in the appendix gives a detailed overview of the literature on the AWE.

[3]In addition, Juhn and Potter (2007) and Bryan and Longhi (2013) find evidence of positive labor force participation effects of partners in an economic downturn that do not translate into increases of employment.

Institutional setting 3.2

Bearing in mind that the room for an AWE is likely to be driven by contextual factors, this section sheds light on the institutions and the labor market situation in the Netherlands in the time period under investigation. In particular, we highlight the high share of part-time employment among women and the increasing and substantial share of self-employment in the labor force.

Figure 3.1a presents the labor force participation rates for women in 2000 and 2015 for 16 developed OECD countries. The Netherlands has experienced one of the fastest increases in the female labor force participation rate over the period 2000-2015 (amounting to almost 10 percentage points). As a result, the Netherlands has reached female participation levels that are close to those in Scandinavian countries.[4] As Bredtmann et al. (2018) argue, higher female labor force participation rates are expected to limit the room for extensive margin effects. At the same time, panel (b) of Figure 3.1 suggests that the high share of part-time employment still provides room for women to increase working hours. This makes the Netherlands a particularly interesting case to study AWE effects at the intensive margin.

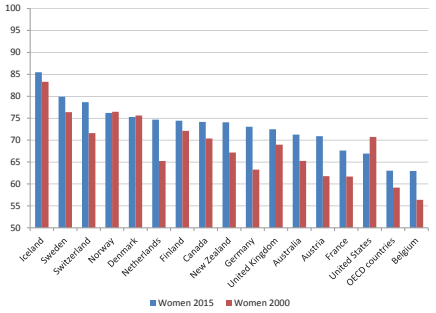
Between 2000 and 2015, the Dutch labour market has also been marked by a strong increase in the share of employees on fixed-term contracts and the increase in the share of self-employed. The share of employees on fixed-term contracts increased from around 15% in 2000 to slightly more than 20% in 2016, which is one of the highest across OECD countries (OECD 2018c). As panel (c) of Figure 3.1 shows, the increase in the share of self-employed in the Netherlands was the largest for OECD countries (OECD 2018c). Self-employment may have increasingly been used to mitigate income shocks caused by unemployment (OECD 2018c).

To provide insight in the economic conditions over time, Figure 3.1d shows the unemployment rate for the Netherlands and several other OECD countries. The unemployment rate of the Netherlands, denoted by the blue dotted line, was very low from an international perspective in the

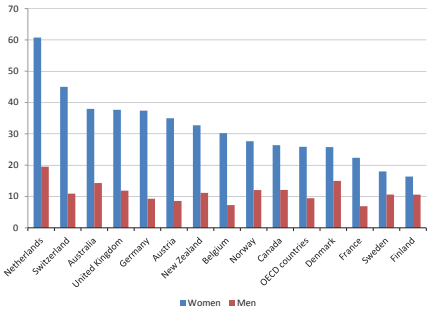
[4] For men, the Netherlands has the third highest labor force participation rate of the OECD in 2015, see Figure A.3.1 in the Supplementary Material.

Figure 3.1: International comparison of labor markets

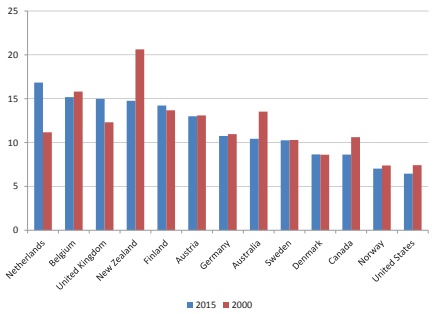
(a) Labour force participation rates for women



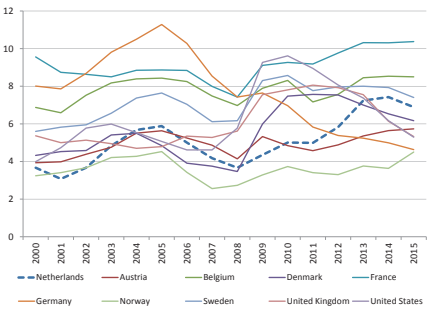
(b) Incidence of part-time employment in 2015



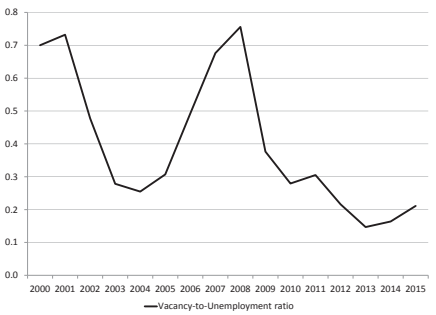
(c) Share of self-employed as a % of total employed



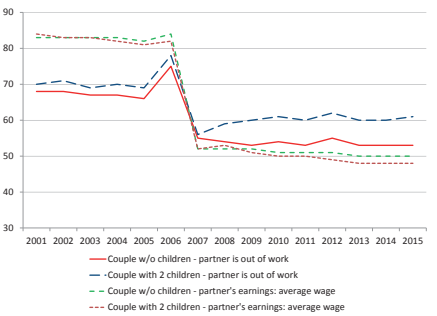
(d) Unemployment rates



(e) Vacancy-to-unemployment ratio



(f) Net repl. rates after 24 months unemployment



Notes: Data are obtained from OECD (2018a,d,e, 2019a,b) and from Statistics Netherlands (Statline).

beginning of the 21st century. The unemployment rate increased from 3.1 in 2001 to almost 5.8 percent in 2005 due to the burst of the dot-com bubble, after which it decreased again to 3.7% in 2008. The increase in the unemployment rate in 2009 was smaller in the Netherlands than in most other OECD countries affected by the Great Recession, but the increase persisted for a longer period of time, reaching a peak of 7.4% in 2014. To complement this data, Figure 3.1e pictures the vacancy-to-unemployment ratio in the Netherlands between 2000 and 2015. This shows that there was an economic downturn in the years 2003-2005 and 2009-2015.

Finally, it is worth noting that UI reforms were implemented in 2006. This implied that the maximum entitlement period was reduced from 60 to 38 months. As panel (f) of Figure 3.1 shows, this has caused a drop in the net replacement rate for individuals that are long-term unemployed, from about 70% to 50%. This in turn may have increased the need for intra-household insurance via an AWE.

Empirical strategy 3.3

Essentially, empirical analyses on the AWE require two major ingredients. First, the idea is to follow behavioral responses to an income shock that is plausibly exogenous and cannot be anticipated by workers' partners. Obvious candidates for such shocks are plant closures, mass layoffs or involuntary firings. Second, one needs to construct control groups of workers that are not hit by these shocks, but do have time effects that are common to the treatment group. Accordingly, the estimation of AWE typically follows a differences-in-differences design to estimate the effect of income shocks on outcome measures. This is also the approach we follow.

While most studies consider the effect of bankruptcies or mass-layoffs to define treatment groups – see e.g. Hardoy and Schøne (2014) and Halla et al. (2018) – we use the inflow into UI benefits. Bearing in mind that the UI benefits are only received for those fired involuntarily, our key assumption is that workers cannot anticipate the timing of this event. We argue that this assumption is not necessarily stronger than in the case of

mass layoffs or plant closures. Similar to these cases, testing potential anticipation effects remains a crucial part of our estimation approach. An advantage of our approach is that we consider income shocks that are expected to be more sizable than income shocks in case of mass-layoffs. In particular, including couples with male partners finding a job after displacement would limit the shock effect, making it harder to infer an AWE, which are typically found to be relatively small.

As a second ingredient of our analysis, we select couples 25–55 years of age with male partners with an income from work of at least 5,000 euro and with no income from UI, social assistance or other benefits in the years before becoming unemployed. These sample selection criteria ensure that the treatment and control groups have similar (stable) labor market positions for a long stretch of time.

To formalize matters, we define the treatment group as those women with a partner who worked in *t*-1 and started receiving UI benefits in period *t*. The control group contains women with a partner who did not receive UI benefits in both period *t-1* and *t*. For each year in our sample, we construct treatment and cohort groups this way. In effect, this means that we have 10 cohort years (2003-2012) for which we constructed balanced samples including 4 years before becoming unemployed, the year of the income shock, and 3 years thereafter. For these samples, we estimate linear models that are specified as follows:

$$Y_{it} = X'_{it}\,\beta_x + \tau_t + \alpha_i + \sum_{j=-2}^{3} d_{it}^{\,j}\,\gamma_j + \epsilon_{it}. \tag{3.1}$$

for individual i in year t. In the above specification, the outcome variables Y are regressed on a set of time-varying demographic controls (age) X_{it}, year fixed effects (τ_t), individual fixed effects (α_i), and the treatment dummies $d_{it}^{\,j}$ which are equal to one if the partner of woman i became unemployed in year t, j years from year t, and zero otherwise. The residual

term ϵ_{it} is assumed to be i.i.d.[5] Equation [3.1] can be estimated with fixed effects estimation.[6] As such, we control for a priori differences in outcome values between the treatment and control groups.

Our parameters of interest that describe the AWE are included in vector γ. For values of j that are zero or positive, γ equals the short- and longer-term effects of the unemployment shock. For the two pre-treatment dummies, the values of j are negative and γ captures potential anticipation effects or different trends in the two years before the husbands' income shock, hence these are placebo tests.

Data 3.4

We use administrative data from the Labour Market Panel (In Dutch: *Arbeidsmarktpanel*) of Statistics Netherlands (2015). The Labour Market Panel is a large and rich household panel data set, tracking 1.8 million individuals over the period 1999–2015. The main outcome variables we consider are female partner's wages and profits from self-employment, male partner's wages and profits from self-employment, income from UI benefits, social assistance benefits, welfare benefits, disability benefits and other benefits. In addition, we estimate the AWE on the participation rate and on the number of hours worked that are observed in the data.[7] All variables are measured on an annual basis.

As argued earlier, we select couples in which both partners are 25–55 years of age to make sure that the treatment and control group are comparable. While younger individuals are often studying or living with their parents, older individuals may anticipate old age benefits in the years before retirement. Also, note that we restrict the sample to heterosexual

[5] In the results section we consider different levels of clustering of the standard error, which may be at the level of provinces, provinces interacted with nationality and the individual level, and show that our results are robust in terms of statistical significance using different levels of clustering.

[6] Note that the group dummy is absorbed by the individual fixed effects.

[7] Unfortunately, data on hours worked is only available for the shorter period 2006-2015.

couples, who also stay together during the full 8 years in the balanced samples.[8]

Table 3.1 presents sample characteristics for our balanced panel consisting of 'treated' individuals and untreated individuals, for selected cohorts (2004, 2008 and 2012) to ease the exposition. The table shows the values that are averaged over the pre-treatment period, consisting of the four periods before the 'treated' individuals enter UI. First, the table shows the mean values of demographic variables. Comparing treatment and control groups, we find relatively small differences in age for both male and female partners. There are some differences in the treatment group and control group regarding ethnicity and the level of education, however, below we show that we obtain similar results for the AWE when we exclude or include demographic control variables (and exclude individual fixed effects).

Regarding the outcome variables in our analysis, Table 3.1 shows some differences in earnings in the pre-treatment period for the treatment and control groups. Men in the treatment group earned 3,000-4,000 euro (about 8%) less in the treatment group compared to the control group for the treatment years 2004 and 2012, whereas men who became unemployed in 2008 earned slightly more than the control group. Male partner's income from profits is slightly smaller in the treatment group than in the control group for the treatment years 2008 and 2012. Female partner's income from work and from profits as well as their employment rates are all about the same for the treatment and control groups for the different treatment years.

[8]We do not consider same-sex couples because the distinction between same-sex couples and friends living together is harder to make with the data. Furthermore, we do not consider the effect of entering UI on the stability of relationships.

Table 3.1: Sample characteristics (standard deviations in parentheses)

	2004		2008		2012	
	Treatment group (before unemployment) (2000-2003)	Control group	Treatment group (before unemployment) (2004-2007)	Control group	Treatment group (before unemployment) (2008-2011)	Control group
Explanatory variables						
Men						
Age	40.908	41.190	42.349	42.151	43.459	43.430
	(7.534)	(7.322)	(7.069)	(7.023)	(6.840)	(6.653)
Western immigrant	0.087	0.067	0.087	0.066	0.068	0.064
	(0.281)	(0.250)	(0.282)	(0.248)	(0.251)	(0.245)
Non-Western immigrant	0.068	0.033	0.065	0.043	0.064	0.050
	(0.252)	(0.180)	(0.247)	(0.202)	(0.244)	(0.218)
Medium education level	0.447	0.434	0.427	0.439	0.455	0.446
	(0.497)	(0.496)	(0.495)	(0.496)	(0.498)	(0.497)
High education level	0.272	0.334	0.334	0.344	0.283	0.350
	(0.445)	(0.472)	(0.472)	(0.475)	(0.451)	(0.477)
Women						
Age	38.745	39.051	40.216	40.018	41.306	41.338
	(7.592)	(7.376)	(7.245)	(7.140)	(6.989)	(6.833)
Western immigrant	0.087	0.075	0.112	0.075	0.071	0.075
	(0.281)	(0.263)	(0.316)	(0.263)	(0.257)	(0.263)
Non-Western immigrant	0.067	0.037	0.066	0.048	0.071	0.055
	(0.251)	(0.190)	(0.248)	(0.214)	(0.256)	(0.229)
Medium education level	0.436	0.471	0.435	0.485	0.491	0.497
	(0.496)	(0.499)	(0.496)	(0.500)	(0.500)	(0.500)
High education level	0.253	0.247	0.281	0.275	0.265	0.294
	(0.435)	(0.431)	(0.449)	(0.446)	(0.441)	(0.455)
Number of children	1.435	1.558	1.540	1.655	1.675	1.749
	(1.082)	(1.128)	(1.091)	(1.088)	(1.044)	(1.048)
Dependent variables						
Men						
Income from work	36,627	39,710	46,622	45,793	49,999	53,978
	(21,578)	(23,953)	(45,905)	(32,151)	(35,841)	(39,956)
Income from profits	170	189	151	311	−58	294
	(7,722)	(4,826)	(3,978)	(6,340)	(10,520)	(7,273)
Women						
Income from work	12,609	12,353	14,900	15,082	18,651	18,950
	(12,357)	(12,141)	(14,478)	(15,322)	(17,219)	(17,583)
Income from profits	626	420	857	626	912	1040
	(7,329)	(4,904)	(8,235)	(6,411)	(7,832)	(9,009)
Employment rate	0.752	0.757	0.765	0.796	0.801	0.826
	(0.432)	(0.429)	(0.424)	(0.403)	(0.399)	(0.379)
Hours worked	876	817	885	882	925	944
	(974)	(916)	(920)	(968)	(667)	(639)
Observations	7,952	483,240	3,632	437,252	8,552	353,204
Number of individuals	1,988	120,810	908	109,313	2,138	88,301

3.5 Results

3.5.1 The added worker effect

Figure 3.2 presents graphical evidence of the AWE, showing the average income of female partners from 4 years before the male partner starts to receive UI benefits until 3 years thereafter. The solid black lines denote the control group (women whose male partner did not enter UI), the dashed red lines denote the 'treatment' group (women whose partner did enter UI) and the dotted blue lines denote the differences between the treatment group and the control group. For the years 2003–2006 and 2010–2012, income from work for both groups appears to move parallel, consistent with the assumption of common time effects. Similar eyeball tests suggests the presence of small and positive AWE in most years. For the years 2007–2009, however, we observe small differences in the time pattern between the treatment and control group before the unemployment shock. In what follows, we thus should interpret the estimation results for these years with the appropriate care.

Table 3.2 gives the 'treatment effect' on the income of the male partner, i.e. the direct effect of the unemployment shock on the wage income of the male partner. The different columns present the results for different treatment years (years in which male partners enter UI) and the rows show the treatment effect from two years before the treatment (t-2) up to 3 years after the treatment (t+3). The pre-treatment placebo dummies are (typically) small and statistically insignificant.[9] For most treatment years we observe a negative treatment effect on male partner's income of about 15 thousand euro in the year that the male partner becomes unemployed. This effect increases to about 25 thousand euro in the year after becoming unemployed, which is more than 50% of the income before unemployment. This increase from year t to year $t+1$ stems from the fact that we use annual data wherein not all male partners become unemployed in the beginning of the year. Three years after the unemployment shock, we still observe a negative treatment effect of about 20 thousand euro. This

[9] The proverbial exception is the placebo for 2006, which is however still small when compared to the 'treatment effect' that follows.

indicates a sizable, persistent negative effect of becoming unemployed on income, which is substantially larger than the loss in income that is typically observed in the literature. Using mass layoffs, Hardoy and Schøne (2014) find a 5% reduction in income which remains approximately the same level in the 4 years after displacement and Halla et al. (2018) find a relatively stable decrease of 21-24% of the pre-displacement mean earnings. As argued earlier, our treatment group does not include men that did not transit to a new job without going through UI. To further understand the large income drop in our case, Table A.3.2 in the appendix shows the treatment effect on male partner's probability of being employed. For most treatment years, the employment rate is about 22 percentage points lower in the year after the unemployment shock. Hence, 40 to 45% of the negative treatment effect on men's wage income can be explained by being unemployed and more than half appears to be due to lower wages in subsequent employment. This is more than is typically found in the literature using mass layoffs. Deelen et al. (2018) estimate a decrease in the employment rate in the year after displacement of 18 percentage points for older age workers (45-54) and 12 percentage points for prime-age workers (35-44) in the Netherlands. Meekes and Hassink (2019) find a displacement effect on employment of –20% for the Netherlands, which remains stable between 1 and 3 years after displacement. Also, both Deelen et al. (2018) and Meekes and Hassink (2019) find substantially lower but stable treatment effects on wages, ranging from –3 to –8%.

Table 3.3 shows the AWE estimates – that is, the treatment effect on the female partner's wage income from work for all year cohorts in our sample. First, we consider the placebo treatment dummies for t-2 and t-1, which are typically small and statistically insignificant.[10] The treatment effect varies across years, but is typically in the order of 500-1,000 euro in the years after the male partner enters UI. The AWE is rather stable over the years following entry into UI, corresponding to 2–5% of the income shock for the male partner. Hardoy and Schøne (2014) find an AWE of 7–18% of a much smaller income shock and Halla et al. (2018) find an

[10] Again with one exception, the dummy for t-1 for female partners of male partners that become unemployed in 2007, where the placebo dummy is significant at the 10% level.

Figure 3.2: Wage income for women whose male partner enters UI in a specific year (treatment group) or not (control group)

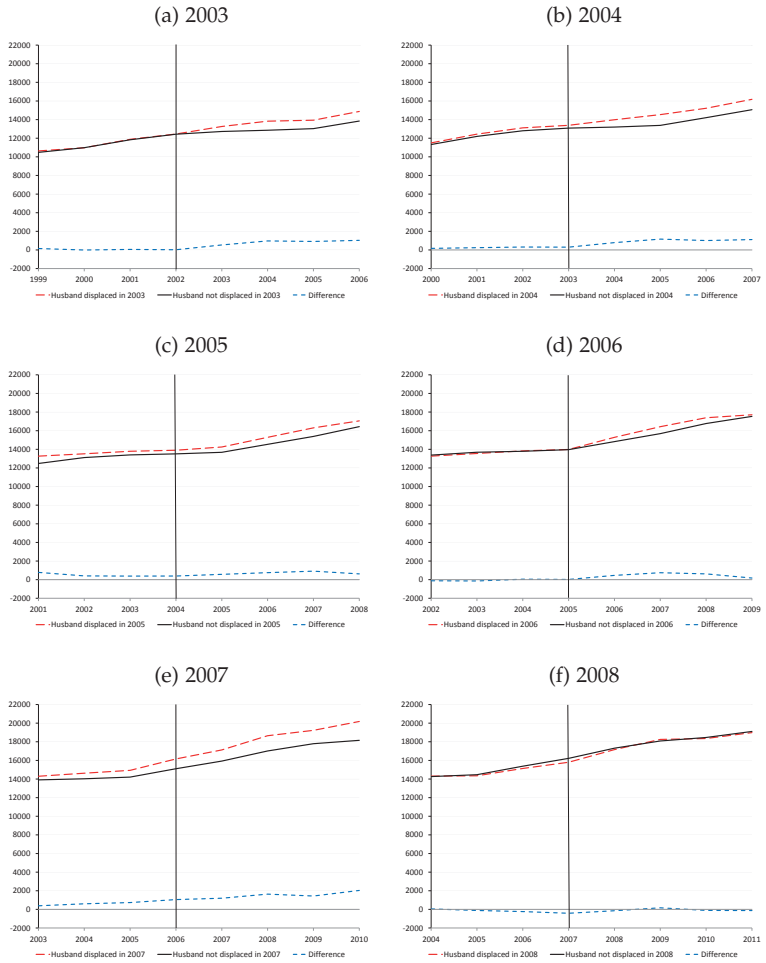
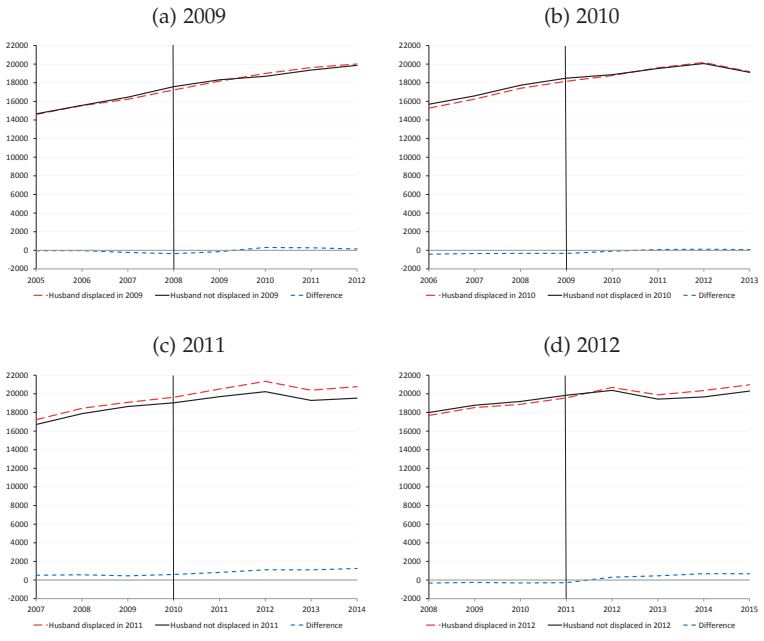


Figure 2: *Continued*



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands). The solid black lines denotes the control groups, the red lines denote the treatment groups and the dotted blue lines denote the differences between the treatment group and the control group. Figures for individual treatment years are based on a sample of individuals: with observations available for the full 8-year period, couples that stay together during the full period, 25-55 years of age for both the female and male partner in the year before the treatment year, and with husbands that earn at least 5,000 euro and receive no UI, social assistance or other benefits in the years before the treatment.

Table 3.2: Treatment effect of entering UI on wage income male partner

	(1)	(2)	(3)	(4)	(5)
	2003	2004	2005	2006	2007
Male partner displaced in t-2	407	−560	−696	−273	−211
	(412)	(463)	(564)	(681)	(820)
Male partner displaced in t-1	−106	−273	−382	1,364**	152
	(412)	(463)	(564)	(681)	(820)
Male partner displaced in t	−12,223***	−13,176***	−12,621***	−17,005***	−13,417***
	(412)	(463)	(564)	(681)	(820)
Male partner displaced in t+1	−21,793***	−19,532***	−21,599***	−23,434***	−21,498***
	(412)	(463)	(564)	(681)	(820)
Male partner displaced in t+2	−17,697***	−15,953***	−17,882***	−19,751***	−19,575***
	(412)	(463)	(564)	(681)	(820)
Male partner displaced in t+3	−16,091***	−13,733***	−17,011***	−20,279***	−20,112***
	(412)	(463)	(564)	(681)	(820)
Demographic controls	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6)	(7)	(8)	(9)	(10)
	2008	2009	2010	2011	2012
Male partner displaced in t-2	−48	−221	−224	124	−599
	(879)	(545)	(544)	(605)	(680)
Male partner displaced in t-1	1,666*	−830	−1,015*	−367	−883
	(879)	(545)	(544)	(605)	(680)
Male partner displaced in t	−14,710***	−16,945***	−19,471***	−17,566***	−18,613***
	(879)	(545)	(544)	(605)	(680)
Male partner displaced in t+1	−26,172***	−26,377***	−27,116***	−27,204***	−30,220***
	(879)	(545)	(544)	(605)	(680)
Male partner displaced in t+2	−22,810***	−20,898***	−24,107***	−23,696***	−25,387***
	(879)	(545)	(544)	(605)	(680)
Male partner displaced in t+3	−21,108***	−19,790***	−22,834***	−22,565***	−23,893***
	(879)	(545)	(544)	(605)	(680)
Demographic controls	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the male partner has an annual income from work of at least 5,000 euro in the 4 years before the treatment and does not receive UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table 3.3: Treatment effect wage income female partner (added worker effect via wages)

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	−1	105	−182	151	220
	(136)	(155)	(182)	(226)	(299)
Male partner displaced in t-1	−31	96	−176	112	528*
	(136)	(155)	(182)	(226)	(299)
Male partner displaced in t	495***	607***	24	557**	669**
	(136)	(155)	(182)	(226)	(299)
Male partner displaced in t+1	926***	998***	225	849***	1,102***
	(136)	(155)	(182)	(226)	(299)
Male partner displaced in t+2	855***	858***	396**	729***	897***
	(136)	(155)	(182)	(226)	(299)
Male partner displaced in t+3	968***	970***	107	297	1,482***
	(136)	(155)	(182)	(226)	(299)
Demographic controls	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−214	−178	53	−86	−26
	(313)	(188)	(187)	(217)	(181)
Male partner displaced in t-1	−392	−308	38	68	2
	(313)	(188)	(187)	(217)	(181)
Male partner displaced in t	−124	−99	285	293	604***
	(313)	(188)	(187)	(217)	(181)
Male partner displaced in t+1	195	344*	470**	585***	761***
	(313)	(188)	(187)	(217)	(181)
Male partner displaced in t+2	−77	294	501***	574***	992***
	(313)	(188)	(187)	(217)	(181)
Male partner displaced in t+3	−80	156	461**	718***	1,001***
	(313)	(188)	(187)	(217)	(181)
Demographic controls	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the male partner has an annual income from work of at least 5,000 euro in the 4 years before the treatment and does not receive UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table 3.4: Treatment effect female partner's income from work and profits ('total' added worker effect)

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	-99	119	-138	352	216
	(155)	(174)	(201)	(248)	(323)
Male partner displaced in t-1	-131	161	-137	242	626*
	(155)	(174)	(201)	(248)	(323)
Male partner displaced in t	624***	618***	217	1,095***	842***
	(155)	(174)	(201)	(248)	(323)
Male partner displaced in t+1	1,152***	994***	506**	1,026***	1,703***
	(155)	(174)	(201)	(248)	(323)
Male partner displaced in t+2	1,122***	1,102***	749***	1,076***	1,393***
	(155)	(174)	(201)	(248)	(323)
Male partner displaced in t+3	1,313***	1,322***	798***	850***	2,151***
	(155)	(174)	(201)	(248)	(323)
Demographic controls	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	115	-178	38	-26	12
	(336)	(204)	(203)	(236)	(201)
Male partner displaced in t-1	-3	-147	51	214	-104
	(336)	(204)	(203)	(236)	(201)
Male partner displaced in t	697**	174	283	673***	658***
	(336)	(204)	(203)	(236)	(201)
Male partner displaced in t+1	882***	727***	593***	1,064***	853***
	(336)	(204)	(203)	(236)	(201)
Male partner displaced in t+2	737**	661***	839***	1,100***	979***
	(336)	(204)	(203)	(236)	(201)
Male partner displaced in t+3	623*	565***	611***	1,272***	865***
	(336)	(204)	(203)	(236)	(201)
Demographic controls	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Individual fixed effects	YES	YES	YES	YES	YES
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the male partner has an annual income from work of at least 5,000 euro in the 4 years before the treatment and does not receive UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

AWE of 0.6–1.5%. For 2008 and 2009, the start of the Great Recession, AWE estimates on female partner's wage income from work are statistically insignificant.[11] In line with the findings of Halla et al. (2018), depressed labour demand may have muted the AWE on realized income increases, as female partners could not find a job or extend their working hours. Finding a smaller AWE, during an economic downturn is also in line with Maloney (1987), Maloney (1991), Juhn and Potter (2007) and Bryan and Longhi (2013). Later on, from 2010 onwards, the AWE resurfaces.

We next broaden our analysis to income from profits of female partners as self-employed, defining the 'total AWE' as the effect on the sum of wage and profits. Table 3.4 presents this combined treatment effect on female partner's wage income and female partner's profits from self-employment. Again, the placebo dummies are typically small and statistically insignificant.[12] We find a total AWE for the different treatment years, in the order of 800-2,100 euro, which is 3–10% of male partner's income loss. Table A.3.3 shows the effects on mere profits, which contains the difference between Table 3.3 and 3.4. According to these estimates, there is a positive AWE via profits of the female partner rising to about 500 euro three years after the male entered UI.

Robustness checks and additional analyses 3.5.2

Some robustness checks and a heterogeneity analysis are given in the appendix to this paper. For expositional reasons, most tables in the appendix present our results on the 'total' AWE (that includes profit) for the years 2004, 2008 and 2012. Table A.3.4 shows the results for different model specifications. The first column presents the results when the model only controls for year fixed effects and a group dummy. Demographic controls are added in the second model and the third model gives our preferred model where we add individual fixed effects. The results hardly change over these three models. Table A.3.5 shows that the levels of

[11] However, Table 3.4 shows that we still find an AWE for 2008 en 2009 on female partner's profits.

[12] Again with the exception of the dummy for t-1 for male partners that become unemployed in 2007, where the placebo dummy is significant at the 10% level.

significance do not change when we use different levels of clustering of the standard errors.[13] We consider cluster-robust standard errors at the level of province, province interacted with ethnicity, individual and no clustering at all. Following Angrist and Pischke (2008), we prefer to be conservative by reporting the largest standard errors.

Next to considering couples where the male partner enters into UI, we also have estimated the total AWE induced by a large negative shock on male partner's (total) income (wages plus profits). Table A.3.6 and Table A.3.7 consider the AWE of a negative income shock of 20 and 50%, respectively, in total income of the male. Many of the pre-treatment placebo dummies are statistically significant for this treatment group, which violates the assumption of common time effects. Hence, this appears to be a problematic research strategy, and we do not consider the treatment effects. This violation of the assumption of common time effects when considering income shocks provides additional evidence that not finding significant pre-treatment placebo dummies for unemployment shocks means that the unemployment shocks are indeed exogenous as endogenous shocks would cause significant anticipation effects. As another robustness test, we also varied our sample by using different threshold values for the male partners earned income. As Table A.3.8 shows, excluding couples in which the male partners earned an income of less than 0, 5,000 or 15,000 euro in the years before the male partner became unemployed yields similar AWE estimates.[14] We also find a similar AWE when we shorten our samples to 6 year periods in which we observe couples that are together and observed in the data for 6 years, see Table A.3.10.[15] Using 6-year samples also allows

[13] The exception is the placebo for $t-1$ for 2008 that changes from statistically significant at the 10% level in our preferred specification with 'clustering' at the individual level to insignificant with the other levels of clustering.

[14] In Table A.3.9 we exclude couples working in the same sector, so that the AWE is not contaminated by common sectoral shocks. This yields AWE estimates that are slightly larger (one tenth to one fifth), indicating that we may underestimate the AWE somewhat in our base specification because of common sectoral shocks (Hardoy and Schøne 2014).

[15] Using a 6 year rather than an 8 year period addresses the concern that our samples may not be representative for the full population. About 40% of our couples are excluded from our samples because they do not stay together for 8 years or are not observed during the full 8-year period. Finding a slightly smaller AWE for our 6 year samples suggests a slightly lower willingness to compensate for each others income shocks when partners are together for a shorter period.

us to study the effect for the years 2013 and 2014, for which we find an AWE of 700 and 510 euro one year after the male entered UI.

We also analyze whether the AWE has operated mainly at the extensive or the intensive margin. Tables A.3.11 and A.3.12 give the treatment effect on female partner's income from work at the extensive and the intensive margin, respectively. The extensive margin refers to the increase in employment by female partners who didn't work, whereas the intensive margin refers to the intensity of work supplied by female partners already in work. In the current context, the extensive margin effect gives the effect on female partner's wage income for a sample of households in which the female partner was not employed in year t-4. The intensive margin effect gives the effect on female partner's wage income for the remaining sample of households in which the female partner was employed in year t-4. Generally, extensive margin effects are larger than intensive margin effects for the treatment years 2003-2009. For the treatment years 2010-2012, however, extensive margin effects seem absent.[16] When interpreting these findings, one should bear in mind that there was a strong increase in the female employment rate in the time period under consideration. This trend may have limited the room for extensive margin effects over time.

In addition, Table A.3.12 shows no evidence of intensive margin effects during the first years of the Great Recession (2008-2010), whereas the extensive margin effect is not affected by the business cycle. This is in line with Bredtmann et al. (2018), who argue that firms might first cut down the working hours of those already employed, before having to rely on layoffs to reduce their overall costs. These hoarding effects may render it difficult to increase hours worked in the firm in which someone is employed than to find a job at another firm during the beginning of a recession.

To shed more light on intensive and extensive margin effects, Table A.3.14 shows the effect on female partner's participation instead of female partner's income. Participation is measured by either being employed or

[16]We have to interpret the results of Table A.3.11 for the treatment year 2012 with the appropriate care, as we find counter-intuitive negative treatment effects as well as a negative statistically significant pre-treatment placebo dummy. We do not find negative effects when we consider the extensive margin effect on participation (rather than on income) – see Table A.3.13.

having an income from profits. For most treatment years the treatment effect estimates of the participation rate are about 1–2 percentage points for the full sample, which is 1–3% relative to the participation rate in the years before entering UI.[17] Table A.3.15 shows that the treatment effect on female partner's annual hours worked for the treatment years 2010-2012 is 21-43 hours three years after the treatment.[18] This is 2-5% relative to the hours worked in the years before entering UI.

Finally, we study the AWE for various demographic and income groups for the treatment years 2004, 2008 and 2012. Table A.3.16 gives the AWE for different age groups. For the treatment years 2004 and 2012, we find a larger AWE for young (25–35) and middle aged (36–45) women, but no AWE effect for women 46-55 years of age. For the treatment year 2008, there only is evidence for AWE for the middle aged but not for the young. Hence, not finding an overall AWE on wage income for 2008 can be explained by not finding an AWE for the young (25–35). The reason for this may be that it was more difficult for young individuals to increase employment at the beginning of the Great Recession. Table A.3.17 shows the AWE for couples with and without children. The AWE for couples with children is about half the size of the AWE for couples without children. A plausible explanation is that the costs of changing roles within the household are larger when couples have children. Table A.3.18 presents the AWE for women with a low, middle or high level of education. For high educated women, we find a higher AWE and for low educated women we find no AWE at all. This could be explained by difficulties for low educated women to find a job, especially if they have not been employed for years. Table A.3.19 gives the AWE for female partners with different ethnicities. The largest effects are obtained for natives and Western-immigrants and no effect for Non-Western immigrants. For the treatment year 2008, the treatment effect on female partner's income for Western and Non-Western immigrants is negative. This may be explained by correlated shocks for male and female partner, as immigrants may be disproportionately affected at the beginning of the Great Recession.

[17] Table A.3.13 shows that the effects on participation for the extensive margin sample, consisting of women who did not yet work in t-4, is 3–7 percentage points.

[18] Data on hours worked is only available for the shorter period 2006-2015.

Finally, Table A.3.20 shows the AWE for women with male partners within different income groups (measured before unemployment shock). The AWE increases with the income of the male partner (before unemployment shock). This larger AWE for women with high-income partners could be explained by a larger income shock for these households.

How much of the income shock is covered? 3.5.3

Following Hardoy and Schøne (2014), we consider how much of the income shock from unemployment is covered by various types of benefits and other sources of income, such as the AWE, and how much remains uncovered. To ease the exposition, we only report results for a number of representative years: 2004, 2008 and 2012; these are shown in Table 3.5, 3.6 and 3.7, respectively.

Table 3.5 shows the effect of a male worker entering UI on different income sources, for treatment year 2004. Column (1) shows a negative effect on male partner's wage income of –19,532 euro in the year after becoming unemployed, which then becomes less negative over time, to –13,733 three years after entering UI. Income from self-employment for the worker increase up to 2,139 euro three years after entering UI (column (2)). UI benefits compensate 8,777 euro of the wage loss in the year of the unemployment shock, but this drops to only 2,376 euro three years after the unemployment shock (column (3)). Treatment effects on income from welfare benefits, disability benefits and other benefits, which are relatively small, are given in columns (4), (5) and (6). The AWE operating via wage and profit income is presented in columns (7) and (8), respectively. Three years after the unemployment shock, the AWE from wage income is 970 euro and from profits is 352 euro. Finally, column (9) gives the total amount of the wage income loss that is covered. The total compensated amount is 10,254 euro in year t, 11,103 euro in year t+1 and this decreases to 6,598 euro in t+3. This implies that about 78% of the income loss is compensated in the year of the unemployment shock, and subsequently decreases to 48% of the remaining wage income shock 3 years after entering UI. The main reason for the lower 'coverage rate' is the drop in UI benefits. The

Table 3.5: Effect of male partner becoming unemployed in 2004 on different income sources

	(1) Wage man 2004	(2) Profit man 2004	(3) Unemp. benefits man 2004	(4) Welfare benefits man 2004	(5) Disab. benefits man 2004	(6) Other benefits man 2004
Male partner displaced in t-2	−560	−243	−0	0	−0	−1
	(463)	(166)	(35)	(2)	(25)	(39)
Male partner displaced in t-1	−273	−365**	−0	0	−1	−2
	(463)	(166)	(35)	(2)	(25)	(39)
Male partner displaced in t	−13,176***	143	8,777***	0	174***	542***
	(463)	(166)	(35)	(2)	(25)	(39)
Male partner displaced in t+1	−19,532***	1,181***	7,859***	7***	177***	885***
	(463)	(166)	(35)	(2)	(25)	(39)
Male partner displaced in t+2	−15,953***	1,679***	4,481***	18***	169***	787***
	(463)	(166)	(35)	(2)	(25)	(39)
Male partner displaced in t+3	−13,733***	2,139***	2,376***	27***	232***	502***
	(463)	(166)	(35)	(2)	(25)	(39)
Demographic controls	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Individual fixed effects	YES	YES	YES	YES	YES	YES
Observations	982,384	982,384	982,384	982,384	982,384	982,384
Number of individuals	122,798	122,798	122,798	122,798	122,798	122,798

	(7) Wage woman 2004	(8) Profit woman 2004	(9) Total Comp. 2004	(10) Total Comp. in % 2004
Male partner displaced in t-2	105	15	−125	
	(155)	(101)	(256)	
Male partner displaced in t-1	96	65	−207	
	(155)	(101)	(256)	
Male partner displaced in t	607***	11	10,254***	77.8%
	(155)	(101)	(256)	
Male partner displaced in t+1	998***	−4	11,103***	56.8%
	(155)	(101)	(256)	
Male partner displaced in t+2	858***	243**	8,236***	51.6%
	(155)	(101)	(256)	
Male partner displaced in t+3	970***	352***	6,598***	48.0%
	(155)	(101)	(256)	
Demographic controls	YES	YES	YES	
Year fixed effects	YES	YES	YES	
Individual fiixed effects	YES	YES	YES	
Observations	982,384	982,384	982,384	
Number of individuals	122,798	122,798	122,798	

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table 3.6: Effect of male partner becoming unemployed in 2008 on different income sources

	(1) Wage man 2008	(2) Profit man 2008	(3) Unemp. benefits man 2008	(4) Welfare benefits man 2008	(5) Disab. benefits man 2008	(6) Other benefits man 2008
Male partner displaced in t-2	−48	46	−2	0	−1	−1
	(879)	(312)	(71)	(5)	(38)	(59)
Male partner displaced in t-1	1,666*	37	−2	0	−1	−1
	(879)	(312)	(71)	(5)	(38)	(59)
Male partner displaced in t	−14,710***	1,031***	8,139***	0	−14	353***
	(879)	(312)	(71)	(5)	(38)	(59)
Male partner displaced in t+1	−26,172***	2,578***	9,678***	10**	10	1,054***
	(879)	(312)	(71)	(5)	(38)	(59)
Male partner displaced in t+2	−22,810***	3,410***	5,772***	64***	97**	1,133***
	(879)	(312)	(71)	(5)	(38)	(59)
Male partner displaced in t+3	−21,108***	2,986***	3,430***	123***	256***	1,112***
	(879)	(312)	(71)	(5)	(38)	(59)
Demographic controls	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES	YES
Observations	881,768	881,768	881,768	881,768	881,768	881,768
Number of individuals	110,222	110,222	110,222	110,222	110,222	110,222

	(7) Wage woman 2008	(8) Profit woman 2008	(9) Total Comp. 2008	(10) Total Comp. in % 2008
Male partner displaced in t-2	−214	330*	156	
	(313)	(182)	(478)	
Male partner displaced in t-1	−392	389**	31	
	(313)	(182)	(478)	
Male partner displaced in t	−124	821***	10,206***	69.4%
	(313)	(182)	(478)	
Male partner displaced in t+1	195	687***	14,213***	54.3%
	(313)	(182)	(478)	
Male partner displaced in t+2	−77	814***	11,213***	49.2%
	(313)	(182)	(478)	
Male partner displaced in t+3	−80	703***	8,530***	40.4%
	(313)	(182)	(478)	
Demographic controls	YES	YES	YES	
Year fixed effects	YES	YES	YES	
Individual fiixed effects	YES	YES	YES	
Observations	881,768	881,768	881,768	
Number of individuals	110,222	110,222	110,222	

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table 3.7: Effect of male partner becoming unemployed in 2012 on different income sources

	(1) Wage man 2012	(2) Profit man 2012	(3) Unemp. benefits man 2012	(4) Welfare benefits man 2012	(5) Disab. benefits man 2012	(6) Other benefits man 2012
Male partner displaced in t-2	−599	108	−2	0	−0	−1
	(680)	(190)	(56)	(3)	(26)	(129)
Male partner displaced in t-1	−883	−436**	−2	0	−0	−2
	(680)	(190)	(56)	(3)	(26)	(129)
Male partner displaced in t	−18,613***	469**	10,968***	−0	−14	906***
	(680)	(190)	(56)	(3)	(26)	(129)
Male partner displaced in t+1	−30,220***	2,747***	11,654***	14***	−36	717***
	(680)	(190)	(56)	(3)	(26)	(129)
Male partner displaced in t+2	−25,387***	3,997***	6,865***	51***	4	839***
	(680)	(190)	(56)	(3)	(26)	(129)
Male partner displaced in t+3	−23,893***	4,499***	3,110***	127***	304***	374***
	(680)	(190)	(56)	(3)	(26)	(129)
Demographic controls	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Individual fiixed effects	YES	YES	YES	YES	YES	YES
Observations	723,512	723,512	723,512	723,512	723,512	723,512
Number of individuals	90,441	90,441	90,441	90,441	90,441	90,441

	(7) Wage woman 2012	(8) Profit woman 2012	(9) Total Comp. 2012	(10) Total Comp. in% 2012
Male partner displaced in t-2	−26	38	116	
	(181)	(129)	(319)	
Male partner displaced in t-1	2	−105	−544*	
	(181)	(129)	(319)	
Male partner displaced in t	604***	54	12,986***	69.8%
	(181)	(129)	(319)	
Male partner displaced in t+1	761***	92	15,949***	52.8%
	(181)	(129)	(319)	
Male partner displaced in t+2	992***	−13	12,735***	50.2%
	(181)	(129)	(319)	
Male partner displaced in t+3	1,001***	−137	9,279***	38.8%
	(181)	(129)	(319)	
Demographic controls	YES	YES	YES	
Year fixed effects	YES	YES	YES	
Individual fiixed effects	YES	YES	YES	
Observations	723,512	723,512	723,512	
Number of individuals	90,441	90,441	90,441	

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

AWE covered only 10% of the remaining wage income shock 3 years after entering UI, which is only a fraction of the shock.

Table 3.6 provides the results for couples where the male enters UI in 2008, the year the Great Recession started. The negative treatment effects on the wage income of the male are larger and more persistent than in 2004. Compensation from the UI of the male partner increases as well, but decreases as a percentage of the wage income shock. Compensation from the profit income from the male partners increases. There is no significant AWE from wage income of the female, as noted before, though there does appear to be a positive AWE from profit income.[19] The total compensated amount is higher in 2008 compared to 2004, but is a smaller percentage of the (larger) loss in wage income of the male, leaving a larger part of this negative shock uncompensated.

Finally, Table 3.7 gives the results for couples where the male enters UI in 2012, which was the second period ('double dip') of the Great Recession in the Netherlands. The loss in wage income of the male is larger than for 2008, but the treatment effect on male partner's profits is also larger than in the earlier years, rising to 4,499 euros three years after entering UI. It thus seems that the extent to which self-employment contributes to compensating male partner's wage loss has increased over time. We further find that for the 2012 period, the AWE returns.

Conclusion 3.6

In this paper we have studied the AWE in the Netherlands before and during the Great Recession, using a large and rich administrative panel dataset for the period 1999-2015. We have used a differences-in-differences setup with couples where the men enter UI as the treatment group and couples where the men do not enter UI as the control group. We find a negative and persistent effect of the male partner's unemployment shock on his income from work, of about 25 thousand euro one year after becoming unemployed. This corresponds to more than 50% of his income

[19] However, the statistically significant placebo for the women's profit income suggests that we should interpret this latter AWE with the appropriate care.

before becoming unemployed. This loss in wage income from the male leads to a small positive added worker effect on the wage income of the females of about 500-1,000 euro, which compensates 2-5% of the income loss of the male partner. The AWE estimate on wage income is statistically insignificant during the first period of the Great Recession (2008-2009), but resurfaces during the second period of the Great Recession (2010-2015). The AWE at the extensive margin decreased over time, probably because of the strong increase in female employment in the time period under consideration. We also find that profit income becomes a more important insurance tool for dealing with negative wage income shocks over time, from 2,139 euro 3 years after the unemployment shock in 2004 to 4,499 euro 3 years after the unemployment shock in 2012. Finally, when we consider all sources of compensation, including different types of benefits, only 40-50% of the wage income loss from unemployment is compensated three years after entering UI.

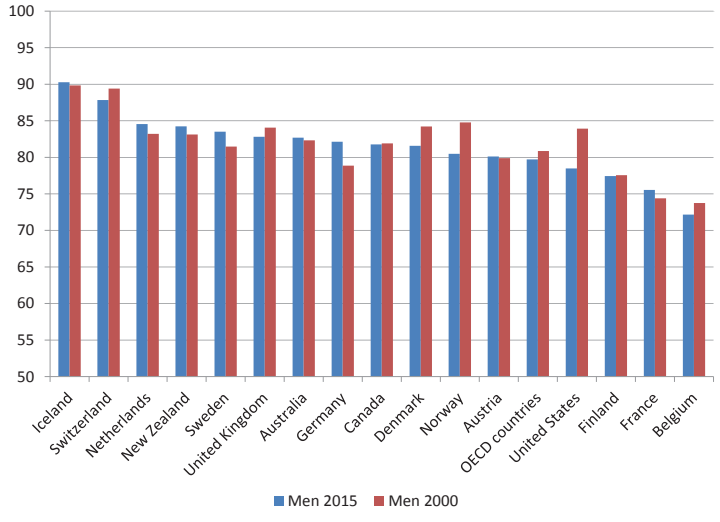
In this paper we have looked at the AWE for couples where the man enters UI, whereas most of the literature has focused on mass layoffs. Our approach yields much larger impulse estimates that are expected to cause larger behavioural responses. We show that our approach of entering UI also gives plausibly exogenous variation in male incomes. In future research it would be interesting to split the analysis of individuals that are laid off during mass layoffs into workers that go straight to another job and workers that first go through UI, and consider whether there is a different AWE for these groups. Decomposing these effects gives insights in the importance of the size of the income shock for the AWE. Further, we study the AWE on employment and income and not on labor supply or job search effort. Future research is needed to study if the AWE is small (even for the large negative shocks we study) because of small labor supply responses or because increases in labor supply do not translate into increases in employment (Juhn and Potter 2007; Bryan and Longhi 2013). The latter could be explained by difficulties in finding a job or getting working hours extended. This is expected to be particularly relevant during an economic downturn because demand side constraints are making it harder to find a job or to increase working hours. Studying both labor supply responses and employment responses in one study

could resolve that some studies (e.g. Bredtmann et al. (2018)) find the AWE to be larger when unemployment is higher and others find the AWE to be smaller when unemployment is higher (e.g. Halla et al. (2018)).

Furthermore, in this paper we have focused on the effect of entering UI by the male on subsequent income and employment of the male and the female. Future research could look at the effect of entering UI on other outcomes, like the stability of relations and fertility, as in Halla et al. (2018), and outcomes like health and happiness.

3.A Supplementary material

Figure A.3.1: Labour force participation rate for men



Notes: Using data from OECD (2018b)

Table A.3.1: Literature review:AWE

Study	Country	Period	Data	Empirical method	Findings
Heckman and MaCurdy (1980)	USA	1968-1975	Panel data PSID	Fixed effects Tobit model	No AWE, no evidence of a married female labour supply response to transitory income variation
Lundberg (1985)	USA	1969-1973	Panel data (monthly) SIME/DIME	Dynamic simulation of estimated employment transition probabilities	2 extra wives employed for 100 additional men unemployed No AWE for black families
Maloney (1987)	USA	1975	Cross-section from PSID	Censored Tobit model	638 hours increase (single censored model), 1706 hours increase (double censored model)
Maloney (1991)	USA	1982	Cross-section from PSID	Double selection model	No AWE, but wives with frequently unemployed husbands have lower reservation wages
Cullen and Gruber (2000)	USA	1984-1988 1990-92	Panel data SIPP	TSLS potential UI as instrument	Wives of unemployed husbands would work 30% more hours if there were no UI income
Stephens (2002)	USA	1968-92	Panel data PSID	Linear fixed effect model and a censored dependent variable model	Long-run AWE increases compensate for over 25% of the husbands'lost income
Juhn and Potter (2007)	USA	1968-2005	Pooled cross-sections CPS files	Simulated employment-pop. ratios using couples' joint transition matrix	AWE: 5.6% point higher chance entering the labour market during expansion and 9.1% during recession
Hardoy and Schøne (2014)	Norway	2000-2005	Panel data	Differences-in-differences	No AWE for full sample, 1% increase in income for wives working in different industries and 2% for wives who did not work full-time
Starr (2014)	USA	2007-2009	Pooled cross-section ACS	Differences-in-differences	4.0% increase in change of being employed, 2.6% increase in chance of being unemployed
Bredtmann et al. (2018)	28 EU-countries	2004-2013	4-year rotating panel EU-SILC	Probit models	Increase in labor supply, job search and hours worked, but no increase in employment rate. Cont. EU (incl. NL): only intens. marg. effect
Halla et al. (2018)	Austria	1990-2007	Panel data ASSD	Differences-in-differences	AWE: 1–2% increase in earnings as well as in employment rate

Table A.3.2: Treatment effect on male partner's employment probability

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	−0.000	0.000	0.000	−0.000	−0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Male partner displaced in t-1	−0.000	0.000	0.000	−0.000	−0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Male partner displaced in t	−0.092***	−0.082***	−0.100***	−0.067***	−0.031***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Male partner displaced in t+1	−0.235***	−0.211***	−0.211***	−0.220***	−0.182***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Male partner displaced in t+2	−0.193***	−0.159***	−0.167***	−0.180***	−0.184***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Male partner displaced in t+3	−0.161***	−0.133***	−0.152***	−0.181***	−0.189***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Observations	917,712	904,704	891,112	868,920	844,944
Number of individuals	114,714	113,088	111,389	108,615	105,618

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−0.000	0.000	0.000	0.000	−0.000
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Male partner displaced in t-1	−0.000	0.000	0.000	0.000	0.000
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Male partner displaced in t	−0.051***	−0.033***	−0.032***	−0.034***	−0.038***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Male partner displaced in t+1	−0.217***	−0.212***	−0.219***	−0.237***	−0.286***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Male partner displaced in t+2	−0.201***	−0.160***	−0.202***	−0.218***	−0.224***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Male partner displaced in t+3	−0.183***	−0.150***	−0.203***	−0.200***	−0.180***
	(0.0042)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	817,688	779,560	743,528	661,744	581,808
Number of individuals	102,211	97,445	92,941	82,718	72,726

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.3: Treatment effect on female partner's income from profit

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	−98	15	44	200	−4
	(91)	(101)	(117)	(145)	(175)
Male partner displaced in t-1	−100	65	38	130	98
	(91)	(101)	(117)	(145)	(175)
Male partner displaced in t	129	11	193*	538***	173
	(91)	(101)	(117)	(145)	(175)
Male partner displaced in t+1	226**	−4	281**	177	600***
	(91)	(101)	(117)	(145)	(175)
Male partner displaced in t+2	267***	243**	354***	347**	496***
	(91)	(101)	(117)	(145)	(175)
Male partner displaced in t+3	345***	352***	692***	553***	669***
	(91)	(101)	(117)	(145)	(175)
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	330*	0	−15	60	38
	(182)	(118)	(120)	(141)	(129)
Male partner displaced in t-1	389**	160	13	146	−105
	(182)	(118)	(120)	(141)	(129)
Male partner displaced in t	821***	273**	−2	380***	54
	(182)	(118)	(120)	(141)	(129)
Male partner displaced in t+1	687***	383***	124	479***	92
	(182)	(118)	(120)	(141)	(129)
Male partner displaced in t+2	814***	367***	338***	526***	−13
	(182)	(118)	(120)	(141)	(129)
Male partner displaced in t+3	703***	409***	150	554***	−137
	(182)	(118)	(120)	(141)	(129)
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the male partner has an annual income from work of at least 5,000 euro in the 4 years before the treatment and does not receive UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.4: Treatment effect on female partner's income (wage+profit) - different models

	(1)	(2)	(3)
	2004	2004	2004
Male partner displaced in t-2	119	118	119
	(175)	(174)	(174)
Male partner displaced in t-1	157	162	161
	(175)	(174)	(174)
Male partner displaced in t	591***	616***	618***
	(175)	(174)	(174)
Male partner displaced in t+1	950***	990***	994***
	(175)	(174)	(174)
Male partner displaced in t+2	1,046***	1,097***	1,102***
	(175)	(174)	(174)
Male partner displaced in t+3	1,260***	1,319***	1,322***
	(175)	(174)	(174)
Year fixed effects	YES	YES	YES
Demographic controls (age)	NO	YES	YES
Fixed Effects	NO	NO	YES
Observations	982,384	982,384	982,384
Number of individuals	122,798	122,798	122,798
	(4)	(5)	(6)
	2008	2008	2008
Male partner displaced in t-2	121	117	115
	(336)	(336)	(336)
Male partner displaced in t-1	3	−2	−3
	(336)	(336)	(336)
Male partner displaced in t	700**	696**	697**
	(336)	(336)	(336)
Male partner displaced in t+1	882***	883***	882***
	(336)	(336)	(336)
Male partner displaced in t+2	728**	737**	737**
	(336)	(336)	(336)
Male partner displaced in t+3	602*	624*	623*
	(336)	(336)	(336)
Year fixed effects	YES	YES	YES
Demographic controls (age)	NO	YES	YES
Individual fixed effects	NO	NO	YES
Observations	881,768	881,768	881,768
Number of individuals	110,222	110,222	110,222
	(7)	(8)	(9)
	2012	2012	2012
Male partner displaced in t-2	22	13	12
	(201)	(201)	(201)
Male partner displaced in t-1	−99	−103	−104
	(201)	(201)	(201)
Male partner displaced in t	658***	657***	658***
	(201)	(201)	(201)
Male partner displaced in t+1	840***	852***	853***
	(201)	(201)	(201)
Male partner displaced in t+2	959***	976***	979***
	(201)	(201)	(201)
Male partner displaced in t+3	831***	863***	865***
	(201)	(201)	(201)
Year fixed effects	YES	YES	YES
Demographic controls (age)	NO	YES	YES
Fixed Effects	NO	NO	YES
Observations	723,512	723,512	723,512
Number of individuals	90,441	90,441	90,441

Notes: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies and a group dummy.

Table A.3.5: Treatment effect on female partner's income from work - different ways of clustering standard errors

	(1)	(2)	(3)	(4)
	2004	2004	2004	2004
Level of clustering	None	Individual	Province	Province* ethnicity
Male partner displaced in t-2	105	105	104	104
	(155)	(121)	(146)	(130)
Male partner displaced in t-1	96	96	77	77
	(155)	(146)	(130)	(161)
Male partner displaced in t	607***	607***	605***	605***
	(155)	(178)	(132)	(196)
Male partner displaced in t+1	998***	998***	805***	805***
	(155)	(207)	(160)	(176)
Male partner displaced in t+2	858***	858***	715***	715***
	(155)	(217)	(142)	(190)
Male partner displaced in t+3	970***	970***	804***	804***
	(155)	(252)	(144)	(173)
Observations	982,384	982,392	942,624	942,624
Number of individuals	122,798	122,799	117,828	117,828

	(5)	(6)	(7)	(8)
	2008	2008	2008	2008
Level of clustering	None	Individual	Province	Province* ethnicity
Male partner displaced in t-2	−214	−214	−151	−151
	(313)	(194)	(162)	(159)
Male partner displaced in t-1	−392	−392*	−333	−333
	(313)	(231)	(188)	(202)
Male partner displaced in t	−124	−124	−100	−100
	(313)	(303)	(198)	(247)
Male partner displaced in t+1	195	195	106	106
	(313)	(418)	(418)	(330)
Male partner displaced in t+2	−77	−77	−115	−115
	(313)	(450)	(457)	(358)
Male partner displaced in t+3	−80	−80	−111	−111
	(313)	(471)	(443)	(405)
Observations	881,768	881,768	855,608	855,608
Number of individuals	110,222	110,222	106,951	106,951

	(9)	(10)	(11)	(12)
	2012	2012	2012	2012
Level of clustering	None	Individual	Province	Province* ethnicity
Male partner displaced in t-2	−26	−26	−13	−13
	(181)	(120)	(106)	(121)
Male partner displaced in t-1	2	2	13	13
	(181)	(169)	(184)	(198)
Male partner displaced in t	604***	604***	588**	588**
	(181)	(200)	(217)	(220)
Male partner displaced in t+1	761***	761***	706***	706***
	(181)	(225)	(206)	(231)
Male partner displaced in t+2	992***	992***	955***	955***
	(181)	(256)	(253)	(273)
Male partner displaced in t+3	1,001***	1,001***	944***	944***
	(181)	(280)	(291)	(307)
Observations	723,512	723,512	710,456	710,456
Number of individuals	90,441	90,441	88,807	88,807

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.6: Treatment effect of male partner's income shock of 20% on female partner's income (wage+profit)

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	2	80	−160	64	203
	(104)	(115)	(121)	(134)	(159)
Male partner displaced in t-1	237**	90	237**	543***	435***
	(104)	(115)	(121)	(134)	(159)
Male partner displaced in t	210**	60	−358***	−41	−202
	(104)	(115)	(121)	(134)	(159)
Male partner displaced in t+1	672***	491***	411***	381***	71
	(104)	(115)	(121)	(134)	(159)
Male partner displaced in t+2	800***	691***	609***	519***	96
	(104)	(115)	(121)	(134)	(159)
Male partner displaced in t+3	935***	855***	503***	517***	318**
	(104)	(115)	(121)	(134)	(159)
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−118	−379***	−599***	−234	55
	(166)	(146)	(148)	(172)	(157)
Male partner displaced in t-1	15	−257*	−285*	143	48
	(166)	(146)	(148)	(172)	(157)
Male partner displaced in t	−820***	−1,015***	−822***	−21	64
	(166)	(146)	(148)	(172)	(157)
Male partner displaced in t+1	95	−543***	−109	818***	567***
	(166)	(146)	(148)	(172)	(157)
Male partner displaced in t+2	−20	61	121	1,222***	727***
	(166)	(146)	(148)	(172)	(157)
Male partner displaced in t+3	2	378***	166	1,175***	855***
	(166)	(146)	(148)	(172)	(157)
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.7: Treatment effect of male partner's income shock of 50% on female partner's income (wage+profit)

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	138	−79	−81	−37	736***
	(158)	(180)	(184)	(206)	(272)
Male partner displaced in t-1	264*	−11	350*	763***	838***
	(158)	(180)	(184)	(206)	(272)
Male partner displaced in t	298*	−435**	−581***	−533***	−701***
	(158)	(180)	(184)	(206)	(272)
Male partner displaced in t+1	911***	363**	399**	198	−474*
	(158)	(180)	(184)	(206)	(272)
Male partner displaced in t+2	1,312***	358**	914***	780***	−27
	(158)	(180)	(184)	(206)	(272)
Male partner displaced in t+3	1,51***	258	690***	844***	431
	(158)	(180)	(184)	(206)	(272)
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−55	−786***	−391	−891***	393
	(264)	(236)	(241)	(294)	(267)
Male partner displaced in t-1	−96	−372	78	−266	−256
	(264)	(236)	(241)	(294)	(267)
Male partner displaced in t	−1,777***	−1,957***	−742***	−1,126***	−760***
	(264)	(236)	(241)	(294)	(267)
Male partner displaced in t+1	519**	−586**	86	307	−125
	(264)	(236)	(241)	(294)	(267)
Male partner displaced in t+2	237	−119	576**	756**	483*
	(264)	(236)	(241)	(294)	(267)
Male partner displaced in t+3	125	−246	502**	564*	1,145***
	(264)	(236)	(241)	(294)	(267)
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.8: Treatment effect on female partner's income from work - different samples

	(1)	(2)	(3)
	2004	2004	2004
Male partners income	>0	>5000	>15000
Male partner displaced in t-2	104	105	100
	(158)	(155)	(146)
Male partner displaced in t-1	107	96	80
	(158)	(155)	(146)
Male partner displaced in t	644***	607***	605***
	(158)	(155)	(146)
Male partner displaced in t+1	1,001***	998***	1,03***
	(158)	(155)	(146)
Male partner displaced in t+2	806***	858***	878***
	(158)	(155)	(146)
Male partner displaced in t+3	1,052***	970***	995***
	(158)	(155)	(146)
Observations	1.131.768	982,384	964,352
Number of individuals	141,471	122,798	120,544

	(4)	(5)	(6)
	2008	2008	2008
Male partners income	>0	>5000	>15000
Male partner displaced in t-2	−80	−214	−229
	(309)	(313)	(299)
Male partner displaced in t-1	−103	−392	−436
	(309)	(313)	(299)
Male partner displaced in t	212	−124	−143
	(309)	(313)	(299)
Male partner displaced in t+1	541*	195	194
	(309)	(313)	(299)
Male partner displaced in t+2	198	−77	−76
	(309)	(313)	(299)
Male partner displaced in t+3	175	−80	−138
	(309)	(313)	(299)
Observations	1,021,432	881,768	866,064
Number of individuals	127,680	110,222	108,259

	(7)	(8)	(9)
	2012	2012	2012
Male partners income	>0	>5000	>15000
Male partner displaced in t-2	53	−26	−14
	(187)	(182)	(183)
Male partner displaced in t-1	70	2	−6
	(187)	(182)	(183)
Male partner displaced in t	1,011***	921***	953***
	(186)	(181)	(182)
Male partner displaced in t+1	175	209	239
	(186)	(181)	(182)
Male partner displaced in t+2	717***	751***	785***
	(186)	(181)	(182)
Male partner displaced in t+3	1,395***	1,479***	1,478***
	(186)	(181)	(182)
Observations	849,136	723,512	714,008
Number of individuals	106,144	90,441	89,253

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.9: Treatment effect on female partner's income from work in sample without partners working in the same sector in the years before husband's unemployment shock

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	24	109	−188	183	129
	(134)	(155)	(179)	(212)	(265)
Male partner displaced in t-1	26	140	−178	183	641**
	(134)	(155)	(179)	(212)	(265)
Male partner displaced in t	548***	714***	82	581***	708***
	(134)	(155)	(179)	(212)	(265)
Male partner displaced in t+1	1,025***	1,094***	426**	996***	1,187***
	(134)	(155)	(179)	(212)	(265)
Male partner displaced in t+2	960***	944***	539***	931***	901***
	(134)	(155)	(179)	(212)	(265)
Male partner displaced in t+3	1,089***	1,083***	249	474**	1,327***
	(134)	(155)	(179)	(212)	(265)
Observations	918,288	901,264	884,776	862,096	835,632
Number of individuals	114,786	112,658	110,597	107,762	104,455

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−140	−101	62	79	18
	(301)	(178)	(171)	(221)	(182)
Male partner displaced in t-1	−360	−223	37	207	179
	(301)	(178)	(171)	(221)	(182)
Male partner displaced in t	−118	94	336**	594***	787***
	(301)	(178)	(171)	(221)	(182)
Male partner displaced in t+1	333	597***	586***	829***	1,066***
	(301)	(178)	(171)	(221)	(182)
Male partner displaced in t+2	19	606***	574***	798***	1,272***
	(301)	(178)	(171)	(221)	(182)
Male partner displaced in t+3	41	493***	543***	935***	1,245***
	(301)	(178)	(171)	(221)	(182)
Observations	807,448	781,200	745,672	705,632	665,848
Number of individuals	100,932	97,651	93,210	88,205	83,233

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.10: Treatment effect on female partner's income from work in 6-year samples

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	−20	93	−199	133	237
	(119)	(138)	(160)	(190)	(258)
Male partner displaced in t-1	−14	112	−171	82	531**
	(119)	(138)	(160)	(190)	(258)
Male partner displaced in t	468***	558***	28	486**	695***
	(119)	(138)	(160)	(190)	(258)
Male partner displaced in t+1	853***	951***	240	717***	1,026***
	(119)	(138)	(160)	(190)	(258)
Observations	767,820	757,242	747,294	730,152	709,398
Number of individuals	127,970	126,207	124,549	121,692	118,233

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−259	−182	133	−95	−59
	(289)	(176)	(174)	(173)	(157)
Male partner displaced in t-1	−458	−336*	85	41	−60
	(289)	(176)	(174)	(173)	(157)
Male partner displaced in t	−165	−78	383**	322*	532***
	(289)	(176)	(174)	(173)	(157)
Male partner displaced in t+1	130	293*	701***	538***	687***
	(289)	(176)	(174)	(173)	(157)

	(11) 2013	(12) 2014
Male partner displaced in t-2	33	−78
	(175)	(136)
Male partner displaced in t-1	96	−106
	(175)	(136)
Male partner displaced in t	486***	283**
	(175)	(136)
Male partner displaced in t+1	700***	510***
	(175)	(136)
Observations	522,888	795,834
Number of individuals	87,149	132,639

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.11: Treatment effect on female partner's income from work - extensive margin

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	165	23	17	−118	534
	(167)	(186)	(230)	(264)	(340)
Male partner displaced in t-1	317*	119	294	56	208
	(167)	(186)	(230)	(264)	(340)
Male partner displaced in t	644***	763***	371	665**	762**
	(167)	(186)	(230)	(264)	(340)
Male partner displaced in t+1	768***	1,188***	813***	1,093***	980***
	(167)	(186)	(230)	(264)	(340)
Male partner displaced in t+2	1,024***	1,141***	1,090***	971***	789**
	(167)	(186)	(230)	(264)	(340)
Male partner displaced in t+3	1,238***	1,280***	1,195***	586**	1,135***
	(167)	(186)	(230)	(264)	(340)
Observations	285,808	257,376	220,560	204,632	191,560
Number of individuals	35,726	32,172	27,570	25,579	23,945

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−49	62	247	308	−393
	(375)	(245)	(251)	(311)	(281)
Male partner displaced in t-1	−17	13	565**	−162	−488*
	(375)	(245)	(251)	(311)	(281)
Male partner displaced in t	57	414*	772***	25	−516*
	(375)	(245)	(251)	(311)	(281)
Male partner displaced in t+1	1,619***	692***	914***	121	−587**
	(375)	(245)	(251)	(311)	(281)
Male partner displaced in t+2	1,127***	582**	930***	273	−508*
	(375)	(245)	(251)	(311)	(281)
Male partner displaced in t+3	1,300***	971***	785***	552*	−614**
	(375)	(245)	(251)	(311)	(281)
Observations	183,920	174,216	156,944	137,168	122,752
Number of individuals	22,990	21,777	19,618	17,146	15,344

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.12: Treatment effect on female partner's income from work - intensive margin

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	−71	133	−240	209	103
	(179)	(198)	(225)	(284)	(374)
Male partner displaced in t-1	−184	93	−308	77	632*
	(179)	(198)	(225)	(284)	(374)
Male partner displaced in t	417**	558***	−79	469*	652*
	(179)	(198)	(225)	(284)	(374)
Male partner displaced in t+1	971***	936***	45	715**	1,171***
	(179)	(198)	(225)	(284)	(374)
Male partner displaced in t+2	762***	762***	181	614**	969***
	(179)	(198)	(225)	(284)	(374)
Male partner displaced in t+3	838***	863***	−229	172	1,637***
	(179)	(198)	(225)	(284)	(374)
Observations	713,936	725,008	745,544	735,504	720,544
Number of individuals	89,242	90,626	93,193	91,938	90,069

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−262	−247	2	−164	49
	(387)	(228)	(224)	(254)	(212)
Male partner displaced in t-1	−506	−400*	−94	121	101
	(387)	(228)	(224)	(254)	(212)
Male partner displaced in t	−171	−245	161	349	850***
	(387)	(228)	(224)	(254)	(212)
Male partner displaced in t+1	−213	239	353	679***	1,028***
	(387)	(228)	(224)	(254)	(212)
Male partner displaced in t+2	−416	203	384*	651**	1,295***
	(387)	(228)	(224)	(254)	(212)
Male partner displaced in t+3	−469	−74	368	765***	1,335***
	(387)	(228)	(224)	(254)	(212)
Observations	697,848	678,960	652,984	631,008	600,752
Number of individuals	87,232	84,871	81,624	78,877	75,095

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.13: Treatment effect on female partner's participation (employed or self-employed) - extensive margin

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	-0.0112	-0.0204	-0.0080	-0.0277	0.0141
	(0.0146)	(0.0156)	(0.0181)	(0.0192)	(0.0231)
Male partner displaced in t-1	0.0058	0.0031	0.0120	0.0115	-0.0184
	(0.0146)	(0.0156)	(0.0181)	(0.0192)	(0.0231)
Male partner displaced in t	0.0323**	0.0450***	0.0340*	0.0532***	0.0285
	(0.0146)	(0.0156)	(0.0181)	(0.0192)	(0.0231)
Male partner displaced in t+1	0.0196	0.0621***	0.0106	0.0720***	0.0477**
	(0.0146)	(0.0156)	(0.0181)	(0.0192)	(0.0231)
Male partner displaced in t+2	0.0397***	0.0276*	0.0120	0.0533***	0.0233
	(0.0146)	(0.0156)	(0.0181)	(0.0192)	(0.0231)
Male partner displaced in t+3	0.0374**	0.0352**	0.0095	0.0353*	0.0137
	(0.0146)	(0.0156)	(0.0181)	(0.0192)	(0.0231)
Observations	285,808	257,376	220,560	204,632	191,560
Number of individuals	35,726	32,172	27,570	25,579	23,945

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	0.0328	0.0054	0.0053	0.0216	0.0060
	(0.0244)	(0.0157)	(0.0164)	(0.0193)	(0.0155)
Male partner displaced in t-1	0.0162	0.0001	0.0122	0.0145	-0.0240
	(0.0244)	(0.0157)	(0.0164)	(0.0193)	(0.0155)
Male partner displaced in t	0.0043	0.0382**	0.0370**	0.0394**	-0.0123
	(0.0244)	(0.0157)	(0.0164)	(0.0193)	(0.0155)
Male partner displaced in t+1	0.0334	0.0356**	0.0506***	0.0443**	-0.0234
	(0.0244)	(0.0157)	(0.0164)	(0.0193)	(0.0155)
Male partner displaced in t+2	0.0105	0.0211	0.0381**	0.0420**	0.0006
	(0.0244)	(0.0157)	(0.0164)	(0.0193)	(0.0155)
Male partner displaced in t+3	-0.0013	0.0298*	0.0469***	0.0167	0.0266*
	(0.0244)	(0.0157)	(0.0164)	(0.0193)	(0.0155)
Observations	183,920	174,216	156,944	137,168	122,752
Number of individuals	22,990	21,777	19,618	17,146	15,344

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.14: Treatment effect on female partner's participation (employed or self-employed)

	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007
Male partner displaced in t-2	−0.0064	−0.0100	−0.0069	−0.0057	0.0029
	(0.0063)	(0.0061)	(0.0063)	(0.0070)	(0.0080)
Male partner displaced in t-1	−0.0034	−0.0038	−0.0094	0.0080	0.0015
	(0.0063)	(0.0061)	(0.0063)	(0.0070)	(0.0080)
Male partner displaced in t	0.0068	0.0068	−0.0012	0.0218***	0.0114
	(0.0063)	(0.0061)	(0.0063)	(0.0070)	(0.0080)
Male partner displaced in t+1	0.0042	0.0202***	0.0012	0.0278***	0.0122
	(0.0063)	(0.0061)	(0.0063)	(0.0070)	(0.0080)
Male partner displaced in t+2	0.0147**	0.0053	−0.0008	0.0230***	0.0144*
	(0.0063)	(0.0061)	(0.0063)	(0.0070)	(0.0080)
Male partner displaced in t+3	0.0190***	0.0117*	−0.0021	0.0161**	0.0161**
	(0.0063)	(0.0061)	(0.0063)	(0.0070)	(0.0080)
Observations	999,744	982,384	966,104	940,136	912,104
Number of individuals	124,968	122,798	120,763	117,517	114,014

	(6) 2008	(7) 2009	(8) 2010	(9) 2011	(10) 2012
Male partner displaced in t-2	−0.0058	−0.0009	0.0010	0.0006	0.0024
	(0.0079)	(0.0048)	(0.0047)	(0.0052)	(0.0046)
Male partner displaced in t-1	−0.0125	−0.0024	0.0028	0.0029	−0.0090*
	(0.0079)	(0.0048)	(0.0047)	(0.0052)	(0.0046)
Male partner displaced in t	−0.0045	0.0089*	0.0019	0.0054	−0.0010
	(0.0079)	(0.0048)	(0.0047)	(0.0052)	(0.0046)
Male partner displaced in t+1	0.0072	0.0112**	0.0023	0.0101*	−0.0020
	(0.0079)	(0.0048)	(0.0047)	(0.0052)	(0.0046)
Male partner displaced in t+2	0.0153*	0.0075	0.0006	0.0046	0.0054
	(0.0079)	(0.0048)	(0.0047)	(0.0052)	(0.0046)
Male partner displaced in t+3	0.0089	0.0085*	0.0018	−0.0005	0.0109**
	(0.0079)	(0.0048)	(0.0047)	(0.0052)	(0.0046)
Observations	881,768	853,176	809,928	768,176	723,512
Number of individuals	110,222	106,648	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.15: Treatment effect on female partner's annual hours worked

VARIABLES	(1) 2010	(2) 2011	(3) 2012
Male partner displaced in t-2	3	−2	−7
	(7)	(8)	(7)
Male partner displaced in t-1	7	−1	2
	(7)	(8)	(7)
Male partner displaced in t	23***	11	20***
	(7)	(8)	(7)
Male partner displaced in t+1	26***	20**	36***
	(7)	(8)	(7)
Male partner displaced in t+2	27***	23***	40***
	(7)	(8)	(7)
Male partner displaced in t+3	28***	21***	43***
	(7)	(8)	(7)
Observations	809,928	768,176	723,512
Number of individuals	101,242	96,023	90,441

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.16: Effect of male partner being displaced on female partner's income (wage + profit) - different age groups female partner

	(1)	(2)	(3)
	2004	2004	2004
Age female partner	25-35	36-45	46-55
Male partner displaced in t-2	355	−10	−174
	(368)	(290)	(363)
Male partner displaced in t-1	411	−130	243
	(368)	(290)	(363)
Male partner displaced in t	1,104***	599**	63
	(368)	(290)	(363)
Male partner displaced in t+1	1,228***	1,061***	412
	(368)	(290)	(363)
Male partner displaced in t+2	1,117***	1,152***	581
	(368)	(290)	(363)
Male partner displaced in t+3	1,578***	1,325***	595
	(368)	(290)	(363)
Observations	301,256	467,728	302,960
Number of individuals	37,657	58,466	37,870

	(4)	(5)	(6)
	2008	2008	2008
Age female partner	25-35	36-45	46-55
Male partner displaced in t-2	−134	302	−179
	(613)	(590)	(595)
Male partner displaced in t-1	166	−258	−187
	(613)	(590)	(595)
Male partner displaced in t	733	958	138
	(613)	(590)	(595)
Male partner displaced in t+1	390	1,370**	804
	(613)	(590)	(595)
Male partner displaced in t+2	513	789	998*
	(613)	(590)	(595)
Male partner displaced in t+3	451	979*	470
	(613)	(590)	(595)
Observations	212,608	445,312	312,480
Number of individuals	26,576	55,665	39,060

	(7)	(8)	(9)
	2012	2012	2012
Age wife	25-35	36-45	46-55
Male partner displaced in t-2	126	−35	78
	(448)	(325)	(356)
Male partner displaced in t-1	629	38	−556
	(448)	(325)	(356)
Male partner displaced in t	1,225***	804**	350
	(448)	(325)	(356)
Male partner displaced in t+1	1,657***	1,013***	214
	(448)	(325)	(356)
Male partner displaced in t+2	1,084**	1,291***	396
	(448)	(325)	(356)
Male partner displaced in t+3	1,418***	909***	584
	(448)	(325)	(356)
Observations	129,424	367,648	311,048
Number of individuals	16,179	45,956	38,881

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.17: Treatment effect on female partner's income (wage + profit)- Couple with and without children

	(1) Couples with children 2004	(2) Couples with children 2008	(3) Couples with children 2012	(4) Couples without children 2004	(5) Couples without children 2008	(6) Couples without children 2012
Male partner displaced in t-2	−31	−70	13	566	793	90
	(193)	(391)	(217)	(373)	(644)	(521)
Male partner displaced in t-1	43	−204	−225	598	761	567
	(193)	(391)	(217)	(373)	(644)	(521)
Male partner displaced in t	481**	374	428**	1,102***	1,875***	1,858***
	(193)	(391)	(217)	(373)	(644)	(521)
Male partner displaced in t+1	772***	626	857***	1,691***	1,871***	970*
	(193)	(391)	(217)	(373)	(644)	(521)
Male partner displaced in t+2	824***	508	917***	1,923***	1,670***	1,420***
	(193)	(391)	(217)	(373)	(644)	(521)
Male partner displaced in t+3	967***	251	690***	2,331***	2,041***	1,836***
	(193)	(391)	(217)	(373)	(644)	(521)
Observations	722,768	693,744	603,560	259,600	188,024	119,944
Number of individuals	90,346	86,719	75,446	32,450	23,503	14,993

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.18: Effect of male partner being displaced on female partner's income (wage + profit) - different level of education female partner

	(1)	(2)	(3)
	2004	2004	2004
Level of education wife	Low	Middle	High
Male partner displaced in t-2	−348	115	284
	(315)	(253)	(492)
Male partner displaced in t-1	−369	139	514
	(315)	(253)	(492)
Male partner displaced in t	−311	631**	1,428***
	(315)	(253)	(492)
Male partner displaced in t+1	116	890***	1,813***
	(315)	(253)	(492)
Male partner displaced in t+2	−20	923***	2,128***
	(315)	(253)	(492)
Male partner displaced in t+3	107	1,113***	2,531***
	(315)	(253)	(492)
Observations	298,688	506,744	263,872
Number of individuals	37,336	63,343	32,984

	(4)	(5)	(6)
	2008	2008	2008
Level of education wife	Low	Middle	High
Male partner displaced in t-2	−4	−204	460
	(520)	(405)	(977)
Male partner displaced in t-1	−165	−33	−235
	(520)	(405)	(977)
Male partner displaced in t	397	327	1,398
	(520)	(405)	(977)
Male partner displaced in t+1	503	882**	1,620*
	(520)	(405)	(977)
Male partner displaced in t+2	866*	871**	718
	(520)	(405)	(977)
Male partner displaced in t+3	309	1,345***	211
	(520)	(405)	(977)
Observations	230,568	472,536	264,872
Number of individuals	28,821	59,067	33,109

	(7)	(8)	(9)
	2012	2012	2012
Level of education wife	Low	Middle	High
Male partner displaced in t-2	484*	−110	−84
	(287)	(241)	(593)
Male partner displaced in t-1	−93	−40	−128
	(287)	(241)	(593)
Male partner displaced in t	292	655***	1,283**
	(287)	(241)	(593)
Male partner displaced in t+1	52	861***	1,437**
	(287)	(241)	(593)
Male partner displaced in t+2	−159	1,055***	1,680***
	(287)	(241)	(593)
Male partner displaced in t+3	−171	1,288***	1,271**
	(287)	(241)	(593)
Observations	169,088	402,512	234,576
Number of individuals	21,136	50,314	29,322

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.19: Effect of male partner being displaced on female partner's income (wage + profit) - different ethnicity

	(1)	(2)	(3)
	2004	2004	2004
Ethnicity		Western	Non-Western
	Native	immigrant	immigrant
Male partner displaced in t-2	184	−426	−167
	(188)	(629)	(655)
Male partner displaced in t-1	162	−56	274
	(188)	(629)	(655)
Male partner displaced in t	705***	−253	515
	(188)	(630)	(655)
Male partner displaced in t+1	1,094***	552	199
	(188)	(630)	(655)
Male partner displaced in t+2	1,125***	1,556**	114
	(188)	(630)	(655)
Male partner displaced in t+3	1,510***	643	−271
	(188)	(630)	(655)
Observations	871,568	73,608	37,208
Number of individuals	108,946	9,201	4,651

	(4)	(5)	(6)
	2008	2008	2008
Ethnicity		Western	Non-Western
	Native	immigrant	immigrant
Male partner displaced in t-2	224	−857	267
	(373)	(1,002)	(1,072)
Male partner displaced in t-1	214	−1,474	−344
	(373)	(1,002)	(1,072)
Male partner displaced in t	1,022***	−997	−767
	(373)	(1,002)	(1,072)
Male partner displaced in t+1	1,351***	−1,633	−804
	(373)	(1,002)	(1,073)
Male partner displaced in t+2	1,410***	−1,897*	−3,285***
	(373)	(1,002)	(1,073)
Male partner displaced in t+3	1,403***	−2,717***	−3,574***
	(373)	(1,002)	(1,073)
Observations	773,032	66,360	42,376
Number of individuals	96,630	8,295	5,297

	(7)	(8)	(9)
	2012	2012	2012
Ethnicity		Western	Non-Western
	Native	immigrant	immigrant
Male partner displaced in t-2	26	93	−279
	(216)	(852)	(685)
Male partner displaced in t-1	−128	−136	163
	(216)	(852)	(685)
Male partner displaced in t	728***	671	−242
	(216)	(852)	(685)
Male partner displaced in t+1	937***	822	−177
	(216)	(852)	(685)
Male partner displaced in t+2	1,093***	1,190	−623
	(216)	(852)	(685)
Male partner displaced in t+3	839***	2,407***	−311
	(216)	(852)	(686)
Observations	629,288	53,856	40,368
Number of individuals	78,662	6,733	5,046

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.

Table A.3.20: Effect male partner displaced in 2004 on income female partner (wage + profit) - different income groups male partner

	(1)	(2)	(3)	(4)
	2004	2004	2004	2004
Income husband	<30.000	30-40.000	40-50.000	50.000+
Male partner displaced in t-2	−108	435	−305	307
	(278)	(298)	(589)	(762)
Male partner displaced in t-1	−143	86	524	1,451*
	(278)	(298)	(589)	(762)
Male partner displaced in t	367	516*	537	2,453***
	(278)	(298)	(589)	(762)
Male partner displaced in t+1	539*	1,088***	646	3,338***
	(278)	(298)	(589)	(762)
Male partner displaced in t+2	464*	612**	2,001***	4,391***
	(278)	(298)	(589)	(762)
Male partner displaced in t+3	351	827***	2,473***	6,32***
	(278)	(298)	(589)	(763)
Observations	503,840	317,096	128,344	122,600
Number of individuals	62,980	39,637	16,043	15,325

	(5)	(6)	(7)	(8)
	2008	2008	2008	2008
Income husband	<30.000	30-40.000	40-50.000	50.000+
Male partner displaced in t-2	−540	560	−592	451
	(671)	(403)	(768)	(1,115)
Male partner displaced in t-1	−362	504	−818	−381
	(671)	(403)	(768)	(1,115)
Male partner displaced in t	209	517	−802	2,182*
	(671)	(403)	(768)	(1,115)
Male partner displaced in t+1	627	766*	−931	2,803**
	(671)	(403)	(768)	(1,115)
Male partner displaced in t+2	23	1,063***	−794	2,332**
	(671)	(403)	(768)	(1,115)
Male partner displaced in t+3	−17	1,505***	−140	866
	(671)	(403)	(768)	(1,115)
Observations	291,728	324,352	167,224	186,816
Number of individuals	36,466	40,544	20,903	23,352

	(9)	(10)	(11)	(12)
	2012	2012	2012	2012
Income husband	<30.000	30-40.000	40-50.000	50.000+
Male partner displaced in t-2	−184	485*	127	−443
	(544)	(267)	(388)	(482)
Male partner displaced in t-1	−510	311	13	−334
	(544)	(267)	(388)	(482)
Male partner displaced in t	424	831***	831**	675
	(544)	(267)	(388)	(482)
Male partner displaced in t+1	178	819***	793**	1,245***
	(544)	(267)	(388)	(482)
Male partner displaced in t+2	345	629**	853**	1,67***
	(544)	(267)	(388)	(482)
Male partner displaced in t+3	602	711***	468	1,589***
	(544)	(267)	(388)	(482)
Observations	164,040	214,920	162,616	266,392
Number of individuals	20,505	26,865	20,327	33,300

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Standard errors in parentheses. Our sample consists of couples 25–55 years of age in the year before the unemployment shock. Further, we select couples in which the husband has an annual income from work of at least 5,000 euro in the 4 years before the treatment and with the husband not receiving income from UI, social assistance or other benefits in the pre-treatment period. All specifications include year dummies, time-varying demographic controls (age) and individual fixed effects.