No stratified effect of unemployment on incomes. How the market, state and household compensate for income loss in the UK and Switzerland

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Alessandro di Nallo, Daniel Oesch

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Alessando di Nallo[1], Daniel Oesch[2]

Abstract

Unemployment is a critical life event that may affect the income trajectories of displaced workers very unequally. It may trigger a process of cumulative disadvantage and hit vulnerable groups hardest. Alternatively, it may level the playing field because higher classes have more to lose. We analyze heterogeneous effects of an unemployment spell on income for Britain and Switzerland. Our analysis is based on two household panels – UK Understanding Society 2009-2017 and the Swiss Household Panel 1999-2017 – and distinguishes two sources of income, from the labor market and welfare state, at two different levels, the individual and households. We match unemployed to employed workers and estimate fixed-effects regressions. Our results show that individual labor income drops in the two years after an unemployment spell by 20 and 25% in Switzerland and by 25 and 55% in the UK. Welfare state transfers reduce these losses by half in Switzerland, but have only a marginal impact in the UK at both the individual and household level. In both countries, income losses do not differ much across social classes. We thus find no evidence for a cumulative disadvantage. The lower classes are at greater risk of becoming unemployed, but this does not automatically translate into greater vulnerability to its consequences.

Keywords: Unemployment, income, welfare state, cumulative advantage, life course, household panel

1. Alessandro di Nallo, Swiss National Centre of Competence in Research LIVES, University of Lausanne, *alessandro.dinallo@unil.ch*
2. Daniel Oesch, Swiss National Centre of Competence in Research LIVES, University of Lausanne, *daniel.oesch@unil.ch*

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Introduction

Losing a job is a critical life event that may completely alter an individual's economic trajectory (DiPrete 2002, Gangl 2006, Brandt and Hank 2014). Yet as new jobs are constantly created and old jobs destroyed, unemployment may also constitute a purely transitory parenthesis in the careers of many workers (Farber 1999, Davis et al. 2006). The large spectrum of possible outcomes – from short-term bumps to long-term scarring – raises the prospect that unemployment affects the careers of population groups very unequally. While workers in subordinate class positions may be particularly vulnerable to its consequences, workers in more privileged class positions may bounce back more easily to a job.

Our paper examines whether the income consequences of an unemployment spell are stratified by individuals' social class. We thus join a handful of longitudinal studies in sociology that analyse heterogeneous effects of unemployment on income (McManus and DiPrete 2000, Ehlert 2012, 2013, Grotti 2016). Our analysis combines the perspectives of the life course and social stratification. Depending on how an individual's material resources and constraints – his or her own class position – interact with a critical life event, unemployment may have purely fleeting consequences or constitute a crucial turning point in the career.

On this issue, the literature offers two conflicting accounts. Unemployment may trigger a process of cumulative disadvantage that hits vulnerable groups hardest, notably the working class (DiPrete and McManus 2000). Or, on the contrary, an unemployment spell may level the playing field because higher-earnings classes have more to lose (Gangl 2006). Rather than increasing income inequality, an unemployment spell would then reshuffle the cards across income groups.

The economic literature on job displacement typically focuses on the consequences of unemployment for work income (e.g. Jacobsen et al. 1993, Couch and Placzek 2010). However,

people's life chances do not only depend on their success on the labour market. Two other institutions potentially compensate the earnings losses due to unemployment: the welfare state through social benefits and the family through the household pooling of resources (Esping-Andersen 1999). A second contribution of our analysis is to separate the incomes stemming from the market (earnings) and the state (taxes and transfers). By further distinguishing income flows at the individual and household level, we show how the pooling of income within households buffers workers against economic insecurity during periods of unemployment (DiPrete and McManus 2000, Ehlert 2012).

The extent to which different institutions provide an income during an unemployment spell is likely to vary across countries. The classical comparison in the literature is between Germany and the United States (e. g. McManus and DiPrete 2000, Gangl 2004, Ehlert 2012, Grotti 2016). Our study focuses on a different contrast and compares the income effect of unemployment between Britain and Switzerland. While Switzerland has an occupational labour market with strong links between vocational education and employment, the United Kingdom comes closer to an internal labour market where general education and on-the-job training dominate (Marsden 1990). Likewise, their welfare states were inspired by different architects: Beveridge and minimum income schemes are central for Britain, Bismarck and status-conserving social insurances for Switzerland (Bonoli 1997).

When analysing the income effect of unemployment, a central concern is selection bias and thus the presence of characteristics that affect both workers' risk of becoming unemployed and their subsequent incomes (Brand 2015: 362). We address this concern with a difference-in-differences design. The idea is to combine an individual-level fixed-effects model with a matching method that provides us with a control group of workers who did not become unemployed. We examine the evolution of income two years before and three years after the

beginning of an unemployment spell on the basis of two household panels: Understanding Society 2009-2017 for the UK and the Swiss Household Panel 1999-2017 for Switzerland.

In what follows, our Theory section will present the idea of heterogeneous effects of unemployment on income and discuss the three institutions that provide individuals with an income: the market, state and family. Our Methods and Data section introduces the household panels and outlines the advantage of combining a matching method with a fixed-effects regression. Our Results section shows findings for overall income loss after unemployment in the UK and Switzerland and then disaggregates these losses for different income sources and social classes. The conclusion summarizes the results and outlines their implications for the concept of cumulative disadvantage.

Stratified effects of unemployment on income

There is ample evidence that workers in lower class positions face greater risks of becoming unemployed than workers in the upper-middle class (Goldthorpe and McKnight 2006, Oesch 2010, OECD 2013: 34). However, being at greater risk of experiencing an event does not automatically translate into larger vulnerability to its consequences. Unemployment may set in motion two different mechanisms. It may activate a process of cumulative disadvantage where the financial hardship of less advantaged groups further increases over time (DiPrete and Eirich 2006). Alternatively, it may initiate a process of regression to the mean where social classes at the top fall from greater heights than classes at the bottom whose income is cushioned by the welfare state's floor effect.

These processes lead to two opposing predictions. On the one hand, workers in higher class positions earn higher wages and have more to lose from unemployment – in relative and, above all, absolute terms – than workers in subordinate positions whose market earnings may not be far from the minimum level of social benefits. On the other hand, workers in higher class

positions also possess more resources to cope with unemployment. They tend to be part of social networks that provide more information and influence on job vacancies (Oesch and von Ow 2017) and they tend to benefit from greater financial means, both in terms of personal savings and unemployment benefits, which may allow them to hold out longer until they find an adequate job (Schmelzer 2011).

Unemployment often leads to earnings losses because job- and firm-specific skills devaluate when workers have to change employer. While access to the professions and management often requires higher education and thus a form of credentialed general skills, the working class may depend more strongly on job- and firm-specific human capital. These specific skills may transfer less easily from one job and firm to another than general educational credentials (Schmelzer 2011). As a consequence, the upper-middle class may fare better than the working class after a spell of unemployment.

However, the literature does not provide a clear-cut answer as to whether regression to the mean or cumulative advantage prevails. While several longitudinal studies find that high-income workers lose, in relative terms, more after an unemployment spell than low-income workers in Britain (Gregoy and Jukes 2001), Germany (Burda and Mertens 2001) as well as in Germany and the United States (DiPrete and McManus 2000, Gangl 2006), more recent evidence suggests that unemployment has the most severe effect on the poorest quintile in the Unites States and the middle quintile in Germany (Ehlert 2013).

One possibility is that the two countervailing mechanisms cancel each other out. Our expectation is that having more resources to cope with unemployment should trump the risk of falling from a greater height that comes with a better paying pre-displacement job. Therefore, our first hypothesis deems a process of cumulative disadvantage to be the more likely outcome:

H1: After an unemployment spell, the labour income of workers in higher class positions will recover more quickly – in relative terms – than those of workers in lower class positions.

The institutions compensating for income loss

Labour markets

Unemployment heightens economic insecurity because earnings from labour constitute the main source of income for most households. Yet the degree to which an unemployment spell effectively translates into economic hardship may vary across countries. Labour market institutions affect both the time it takes for unemployed workers to find a new job and the income levels associated with the new job (Gangl 2006).

While our two-country comparison dissuades us from entering the large debate on the institutional embeddedness of labour markets, one concept seems helpful for the purpose of our study: the distinction between occupational and internal labour markets (Marsden 1990, Ehlert 2013: 88). Countries such as Germany or Switzerland are dominated by an occupational labour market with strong links between education, notably the apprenticeship system, and employment. Vocational degrees certify the skills that are required for specific occupations and provide clear signals to employers about workers' qualifications. In contrast, countries such as Britain or the US come closer to internal labour markets where general education and on-the-job training dominate and vocational skills are often acquired through work experience and specific to single firms (Schmelzer 2011). To the extent that vocational skills are specific to an entire occupation (and not a single firm), and nationally credentialed (and thus widely recognized by employers), human capital may be more easily portable from one employer to another in the German-speaking countries than the United Kingdom or United States (Bol & Van de Werfhorst, 2013, Korber 2019). As a result, our second hypothesis expects earnings losses to be smaller in Switzerland's occupational than in the UK's internal labour market:

Hypothesis 2: an unemployment spell should be associated with a smaller loss in work income in Switzerland than in Britain.

Welfare states and the household

The economic literature on job displacement mostly focuses on how unemployment affects labour market earnings (as exemplified by the overview in Couch and Placzek 2010: 574). However, the extent to which job loss entails economic insecurity and hampers life chances does not only depend on the labour market. Two more institutions crucially contribute to social security: the state and family (Esping-Andersen 1999, DiPrete 2002).

Welfare states provide financial transfers and in-kind services and thus offer a critical safety net for the unemployed. Unemployment benefits serve as automatic stabilizers of income at both the macro-level of the economy and the micro-level of households. Yet the extent to which welfare states reduce the dependence of households on the labour market – the extent of *decommodification* – varies across countries and, within single countries, between population groups (Esping-Andersen 1990, DiPrete and McManuns 2000: 346 Ehlert 2013: 89).

When a slack labour market hampers reemployment and welfare benefits are both modest and short-termed, the family provides a last coping strategy. By pooling resources among household members, families may cushion the consequences of an earnings loss. For economic well-being, the evolution of household income is at least as consequential as individual earnings because the household is the decisive unit of consumption for most people, most clearly so in terms of accommodation and durable goods.

Of course, the three institutional sources of income interact. If the labour market is dynamic and finding a job straightforward, the welfare state does not have to provide an income for long and the household does not have to jump in. While the family is a core provider of social security across the Western world, it becomes particularly important in countries and periods where good jobs are few and government benefits meagre. The typical example is the family-based welfare regime of Southern Europe (Esping-Andersen 1999). Yet Ehlert (2012) finds that also unemployed men in the USA strongly rely on household resources to maintain their

income, notably in comparison with unemployed men in Germany who, in turn, obtain greater support from the welfare state.

Our study's main focus is on identifying how the market (through work income) and state (through social benefits) moderate for different social classes the economic insecurity induced by an unemployment spell. While we do not analyse the role of the family directly, we calculate income losses both at the individual and household level. This informs us on the extent to which the pooling of work income in households – and thus typically among family members – compensates for individuals' loss of earnings. This further allows us to distinguish the contribution of the welfare state at the individual and household level, and this distinction between an individual and household welfare buffer against income loss is not irrelevant. While individuals are the recipients of unemployment compensation, several other means-tested government benefits target the household, typically housing benefits and subsidies of health costs (Immervoll and Richardson 2011).

Our study contrasts Britain with Switzerland and thus compares two welfare states moulded by the different logics of Beveridge and Bismarck (Bonoli 1997). In Switzerland's corporatist welfare state, unemployment benefits are proportional to pre-displacement earnings and thus tend to maintain differences in status among the unemployed. Benefit entitlement is comparatively long (18 to 24 months after job loss), replacement rates are high (70 to 80 per cent of the pre-unemployment wage) and only capped at almost twice the national median wage. In contrast, Britain's liberal welfare state hands out unemployment insurance for only six months and benefits are basically flat rate. Unemployed individuals depend to a greater extent on means-tested benefits such as a jobseeker allowance and housing benefits as well as exemptions from health costs and local taxes (Clasen 2011: 21-22). These transfers accrue to a large extent at the household level.

Available evidence suggests that income losses after job displacement are surprisingly similar across countries. An analysis of the British Household Panel finds that job displacement causes a short-term loss in income of nearly 40 per cent and a long-term loss of 10 per cent (Upward and Wright 2017: 24). These results for Britain are comparable to losses found for the USA (Couch and Placzek 2010) and Germany (Vossemer 2019: 8) where job displacement leads to an income fall of 40 per cent in the first and 15 percent after five years.

Income losses in Britain do not seem to be mitigated much by welfare benefits (Upward and Wright 2017). In this respect, the British results strongly contrast with findings from Nordic countries, notably Norway where unemployment leads to smaller income losses because the drop in earnings from work is compensated by public transfers (Hardoy and Schøne 2014). Similarly, the stabilizing effect of the welfare state after job loss is stronger in Germany than in the United States (McManus and DiPrete 2000: 429, Ehlert 2010). For our country comparison, this suggests that the higher unemployment benefits and more generous transfer system in Switzerland should reduce income losses to a greater extent than in Britain. This leads us to formulate our third hypothesis:

Hypothesis 3: Government taxes and transfers compensate the relative loss of work income due to unemployment to a greater level in Switzerland than in Britain, both at the individual and household level.

Data and measures

Our analysis is based on two household panels, the Swiss Household Panel (SHP) 1999-2017 and the UK Household Longitudinal Study (UKHLS) 2009-2017, also known as Understanding Society. Given that the Swiss Household Panel has a much smaller sample than Understanding Society, we need to take into account more years for Switzerland than the UK. Although the period under study for the UK coincides with the post-recession years, the

unemployment rate in the UK was only marginally higher in the decade after than before the Great Recession. It stood at an average of 3.9 per cent over the period 1999-2008 as compared to 4.5 per cent for 2009-2018. In Switzerland, the unemployment rate increased slightly more over time – from 3 per cent in 1999-2008 to 4.2 per cent in 2009-2018 – and thus reached a similar level as in the UK.[3]

For both countries and datasets, we use all members of the original sample aged 24 to 62 years who reported full interview outcomes, which results in an (unbalanced) sample panel of 4,564 individuals and 48,363 person-years in Switzerland and 35,715 individuals and 395,354 person-years in the UK. Attrition in SHP is comparable with other household panel surveys (e.g., BHPS, PSID): about 65 percent of respondents are retained after five waves for the original (Voorpostel et al., 2017) and the two refreshment samples compensate for the loss of observations. In UKHLS, 52% of the original sample was still participing six years after the beginning (Lynn and Borkowska 2018). While attrition is particularly high in the youngest group aged 16 to 19 in the first wave, note that they are not part of our analytical sample because they do not comply with the age requirements.

Our dependent variable is the logarithm of income, measured with four different income concepts. The first concept of *individual labour income* includes wages from primary and secondary jobs, but not from self-employment. The second measure is *individual post-government labour income* which additionally includes social security transfers, while subtracting taxes. The third measure is *pre-government household income* and captures the pooling of income among household members. The fourth and final concept is the *post-government household income*, which adds social benefits and subtracts household taxes. In years when individuals do not have any earnings, we follow previous studies and assign a value

[3] Data extracted from OECD stat (https://stats.oecd.org/).

of zero income (e.g. Ehlert 2013, OECD 2013, Vossmer 2019).[4] Pre- and post-government household income is adjusted for household size based on the OECD equivalence scale: the respondent is assigned a weight of 1, other adults are given a weight of 0.5 and children of 0.3. All incomes are deflated with the consumer price index.

The key independent variable is a spell of self-reported unemployment that lasts at least one month after at least two months of continuous employment with positive wages.[5] Our treatment thus measures whether individuals experience an episode of unemployment after having been in employment. This means that our focus is on transitions from employment to unemployment such as in Ehlert (2013) – and not on job loss or job displacement which may, or may not, result in a spell of unemployment. The reader should therefore be aware that our measure of unemployment is not an exogenous treatment – contrary to plant closure (Brand 2015). While we try to address this issue by combining a matching method with fixed-effects (see below), we cannot exclude that unobserved heterogeneity affects both the unemployment risk and the income trajectories.

In the SHP, individuals report their employment status on a monthly basis in the activity calendar and income on an annual basis. In UKHLS, personal questionnaires reconstruct the work activity of respondents at the time of the interview as well as any labour market spell that began after the interview of the previous year. Both income and unemployment is reported on a monthly basis. We resolve any potential timing incongruence by assigning an unemployment spell to the first year of unemployment.

For our analysis of heterogeneous effects, we stratify our sample by social class. We use a merged version of the scheme developed by Oesch (2006) and distinguish three employee

[4] In order to be able to calculate log income for spells with 0 income, we attribute an income of 1 to these spells.

[5] We run robustness checks with self-reported unemployment spells that lasts at least (a) two months or (b) six months and show these results in Figures W.2 to W.6 in the web-appendix.

classes: (1) the upper-middle class of managers and professionals; (2) the lower-middle class of associate managers, semi-professionals, technicians and skilled clerks; (3) the working class of craft, production, sales and service workers. These three categories closely echo the distinction made by Erikson and Goldthorpe (1992: 36) between three types of employment regulation, namely the service relationship for occupations at the top, an intermediate form for middling occupations and the labour contract for working-class occupations at the bottom. We allocate wage-earners into one of the three classes based on detailed occupational information (at the level of ISCO 4-digit).

Matching method

Our analytical strategy tries to approach a causal design by explicitly addressing selection into unemployment. We thus compare individuals who experience unemployment (treatment group) with individuals who share similar socio-demographic characteristics and thus similar risks of becoming unemployed, but who do not experience unemployment over the period under study (control group).

Under the potential outcome framework (Rubin 1974), each individual has two potential outcomes: $Y(1)_{jt}$ indicates the income that an unemployed individual receives, and $Y(0)_{jt}$ indicates the income if the same person had not become unemployed. Therefore, for each individual, the causal effect of being unemployed on income is defined as $Y(1)_{jt} - Y(0)_{jt}$. Because each individual is observed only in either the treatment or control group, we need to estimate the counterfactual income for a control group.

As the control and treatment groups differ in characteristics that are relevant for both their risk of becoming unemployed and their income, we make them comparable with a matching approach that uses pre-displacement characteristics. For each individual who eventually becomes unemployed (in the treatment group), we look for one or more individuals who will not experience unemployment (in the control group), but who was the most similar to the

individual in the treatment group based on the observable characteristics a year before the onset of unemployment. Figure A.1 in the appendix illustrates our matching procedure.

We use the method of coarsened exact matching (CEM, Iacus et al. 2011) which involves three steps.[6] First, we temporarily coarsen control variables that may confound the influence of an unemployment spell on income by transforming them into categories. As an example, age was coarsened into three subgroups. Second, we sort all units into strata, each of which has the same values on the coarsened variables. Third, we prune from the dataset the units in any stratum that do not include at least one treated and one control unit. The covariates used for matching includes demographic characteristics (age, gender, having British or Swiss citizenship respectively), education (ISCED 0-2, 3-4, 5-6), number of hours worked, self-perceived health (4 categories) and firm size (4 categories). Note that we do not use the three social classes for matching, but run our model for each of these three groups to examine the presence of heterogeneous effects.

The two groups of individuals who will – and will not – experience an unemployment spell are matched in the same survey year so that both groups are exposed to the same business cycle. The year used for matching precedes the unemployment spell of the treatment group by two years and allows us to compare the income evolution of the two groups over the subsequent waves.

Our design uses a difference-in-differences model and is thus based on the assumption of parallel trends – that is, that in the absence of an unemployment spell, the incomes of treatment and control groups would have evolved in parallel. Figures A.2 and A.3 (in the appendix)

[6] We examine the robustness of our findings by using other matching methods, such as propensity score matching with different algorithms (radius and nearest neighbor) and specifications (different caliper values). Results remain unchanged and are available from the authors.

suggest that this assumption is plausible for both countries during the five years preceding an unemployment spell.

Tables A.1 to A.3 in the appendix show the descriptive statistics of the treatment and control group. For a number of individuals in the treatment group, there was no comparable individual in the control group (that is, the CEM algorithm did not find any matching between the two groups). These observations were deleted from the analysis. Moreover, the total number of unemployment episodes is larger than the number of individuals losing at least once their jobs because some individuals experienced several unemployment spells.[7]

Regression model

We combine our matching method with a fixed-effects panel model to estimate the effect of unemployment on income (Hallaby 2004). The fixed-effects estimator only uses the within-variance stemming from changes in workers' lives over time. This eliminates all observed and unobserved characteristics of the individual that are time-constant such as personality and abilities which may affect both the likelihood to become unemployed and the evolution of income.[8] Our model is based on the following equation:

$$Y_{jt} = \alpha_j + \sum_{k=-2}^{2} \beta_k T_k + \sum_{k=-2}^{2} \gamma_k U_j T_k + X_{jt} + \upsilon_{jt}$$

[7] Unemployment can occur several times during the observation window. Following Ehlert (2013), we therefore constructed a data set consisting of five-year episodes – two before and three after the beginning of each unemployment spell. If a person became unemployed twice, there will be two (possibly overlapping) episodes. In other words, episodes of unemployment are nested within individuals.

[8] A fixed-effects model without matching would control for time-invariant unobserved variables of the individuals who experience unemployment, but it would not address the systematic difference of people who experience unemployment and people who do not experience unemployment. Further, a fixed-effects model can only feature the treated individuals. The results of the Fixed-Effects models are shown in the web-appendix (tables W.1 for the UK and W.2 for Switzerland) and they lead to the same conclusions as the model using matching (compare with Tables A.4 and A.4 in the appendix).

Where Y_{jt} is the income for person (or household) j at time t. T_k indicates the yearly time dummies for the k^{th} relative to the reference year, and β_k represents the associated coefficients and shows the income growth for the control group. U_j is a binary measure for workers experiencing an unemployment spell and is interacted with the time dummies T_k. Therefore, the coefficient γ_k captures the income loss of the unemployed. X_{jt} additionally controls for time-varying socio-demographic characteristics such as age, presence of a partner, children and survey years (aggregated into multi-year groups). α_j is the individual fixed effect, while υ_{jt} captures idiosyncratic errors. We use clustered standard errors at the individual level because the observations are not independent over time. Since log changes are only equal to percentage differences for small quantities, we show all our results in percentages by converting log points into percentage points.

Income losses of the entire workforce

We begin our analysis by focusing on income loss for the entire sample. Figure 1 shows that an unemployment spell in the UK leads to a total loss of individual labour income of more than 55% in the year of unemployment (see Table A.4 in the appendix for the coefficients). In the subsequent two years, the losses decrease to 29% and 25% of pre-unemployment earnings. State transfers in the UK are surprisingly ineffective as they reduce income losses at the individual level by no more than 8 percentage points.

At the household level, losses in pre-government income are more limited as they fall by about 23% in the first year of unemployment and by about 15% and 10% in the two following years. The pooling of income from several members means that a given loss at the individual level makes up a smaller part of total household income. Still, the impact of state transfers in

the UK is also modest at the household level. Factoring in government benefits reduces the income losses only by a few percentage points.

Figure 2 shows for Switzerland that workers lose on average 20% of their pre-government labour income in the year when unemployment takes place. The loss then further increases to 25% in the second year (see Table A.5 for the coefficients).[9] Labour incomes recover two years later when losses decrease to about 15%. Compared to the UK, state benefits are much more consequential in Switzerland. Once government transfers and taxes are added on, income losses are halved. Post-government individual income losses range between 8 and 13% in the three years that follow the beginning of an unemployment spell. Income losses at the household level are almost divided by two in comparison to individual income losses. If we further account for state transfers and taxes at the household level, an unemployment spell leads to income losses of no more than annually 10%.

[9] The reason why our results show larger income losses for T_1 than T_0 is linked to the structure of Switzerland's panel data: the collection of information on income does not refer to the ongoing calendar year (for instance: income reported in year *x* might refer to the period September *x-1* – September *x*) while unemployment histories are synchronized with the calendar year.

Figure 1. *Changes in income after an unemployment spell in the United Kingdom (in %)*

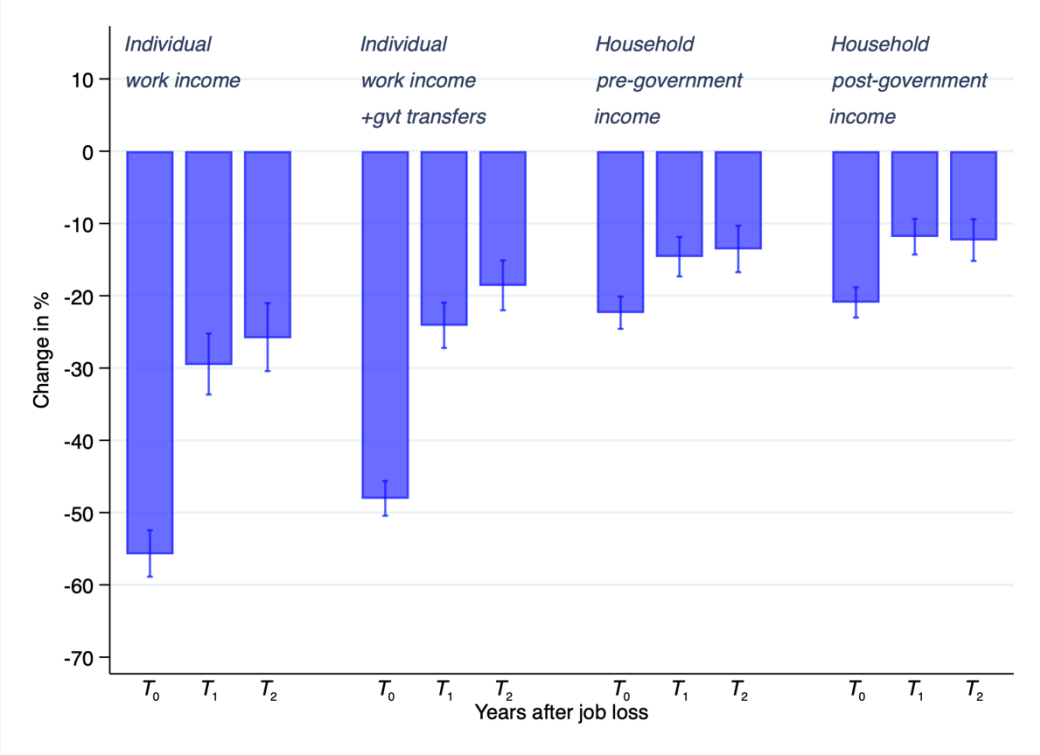
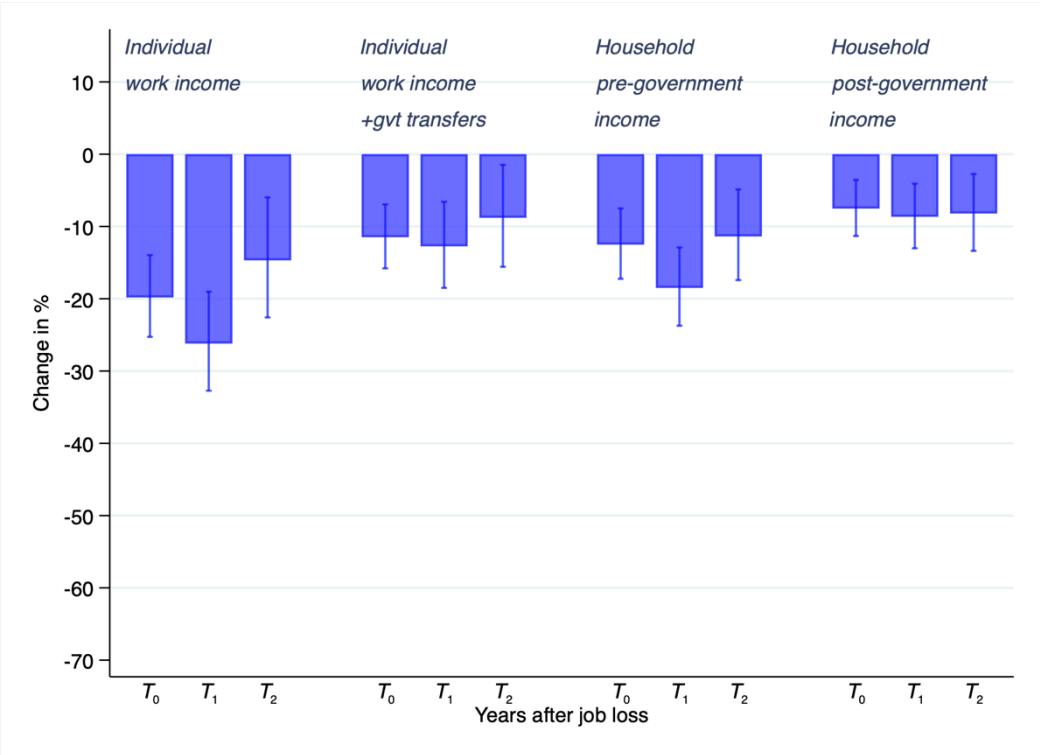


Figure 2. *Changes in income after an unemployment spell in Switzerland (in %)*



In Table 1, we provide summary measures that disentangle the contribution of income from different sources. Column 1 shows the importance of the individual welfare buffer: the extent to which post-unemployment incomes losses are reduced by state transfers and taxes at the individual level. Column 2 reveals the contribution of the household welfare buffer: the extent to which income losses are further moderated by state transfers and taxes at the household level. This overview suggests that welfare state transfers are much more effective in Switzerland. In the first and second year after an unemployment spell, they reduce income losses by 8 to 14 percentage points at the individual level and by 5 to 11 percentage points at the household level. In the UK, the impact of state transfers is weak at the level of both individuals – where it compensates for 4 to 8 percentage points at most – and households where it compensates for no more than 2 to 3 percentage points of the income losses.

Table 1. *The contribution of state transfers and taxes to income after an unemployment spell at the individual and household level (change in income in percentage points)* [10]

	(1) Individual welfare buffer: Post-government minus pre-government individual labour income	**(2) Household welfare buffer: Post-government minus pre-government household income**
	United Kingdom	
T_0	0.08	0.02
T_1	0.04	0.03
T_2	0.06	0.02
	Switzerland	
T_0	0.08	0.05
T_1	0.14	0.11
T_2	0.08	0.06

Income losses by social class

We turn to the analysis of heterogeneous treatment effects and show in Figures 3 and 4 how unemployment affects earnings for each of the social classes (see Tables A.6 to A.11 for the coefficients). For Britain, Figure 3 shows that earnings losses are larger in the upper-middle than in the working class, namely about 64% in T_0 and 37% T_1 in the upper-middle class as compared to 45% and 23% for the working class. Again, income losses are halved at the household level. Although state transfers do not make much of a difference in the UK overall, earnings losses in working-class *households* are lno higher than 10% two years after an

[10] Following DiPrete and McManus (2000) and Ehlert (2013), we calculate the contribution of state transfers and taxes as the difference between pre-government individual labour income and post-government individual labour income:

$$\widehat{Welfare\ state\ effect}\ (individual) = \hat{\delta}^{LIG} - \hat{\delta}^{LI}$$

Where $\hat{\delta}^{X}$ represents the estimated coefficients of pre-government individual labour income changes (LI) and post-government individual income (LIG). At the household level, we calculate the contribution of state transfers and taxes as the difference between pre-government and post-government household income.

$$\widehat{Welfare\ state\ effect}\ (household) = \hat{\delta}^{PostG} - \hat{\delta}^{PreG}$$

unemployment spell. These results suggest that unemployment does not lead to a process of cumulative disadvantage in Britain.

In Switzerland, there are no clear differences in income losses across social classes (Figure 5). Losses are somewhat larger for the lower-middle class in the two years after unemployment (at T_1 and T_2) in terms of individual pre- and post-government labour income. With respect to post-government household earnings, recovery is particularly strong for the working class where income losses appear marginal.

Figure 3. *Changes in income after an unemployment spell by social class in the UK (in %)*

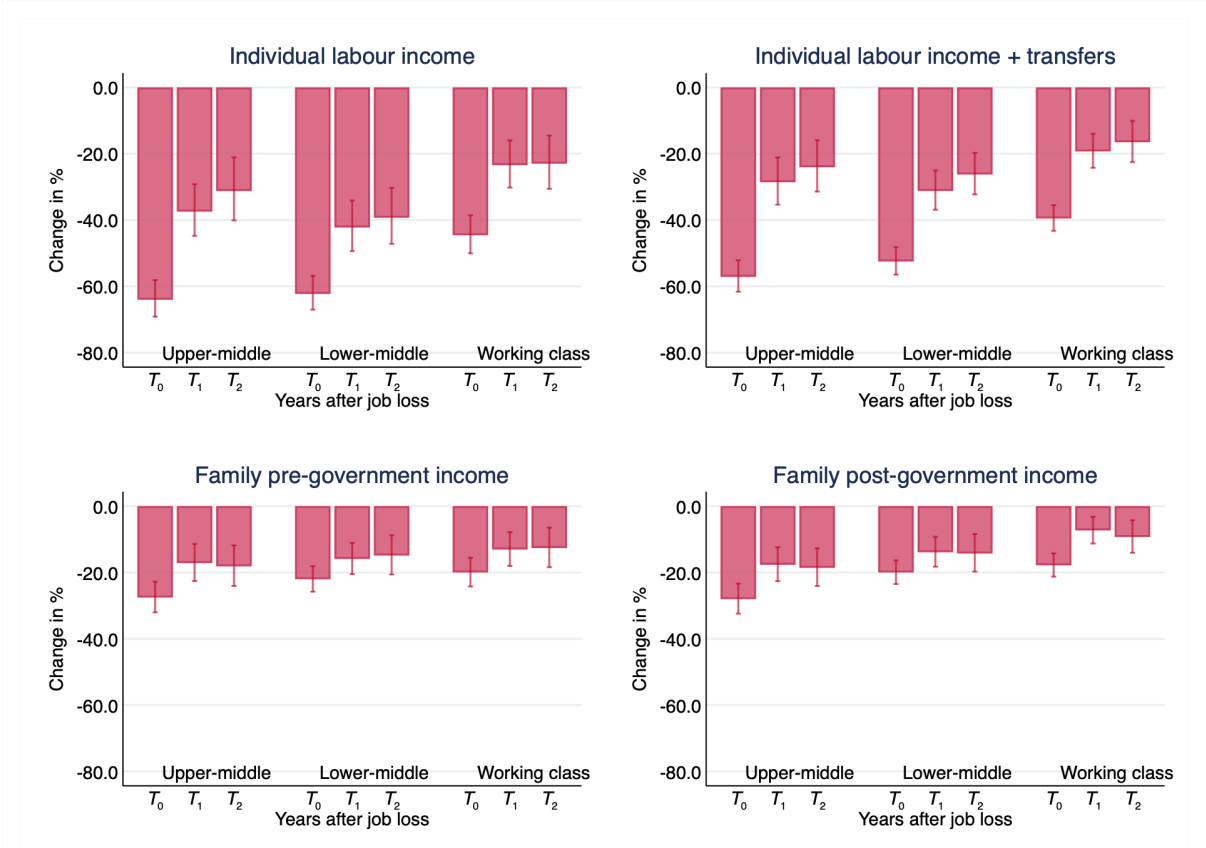


Figure 4. *Changes in income after an unemployment spell by class in Switzerland (in %)*

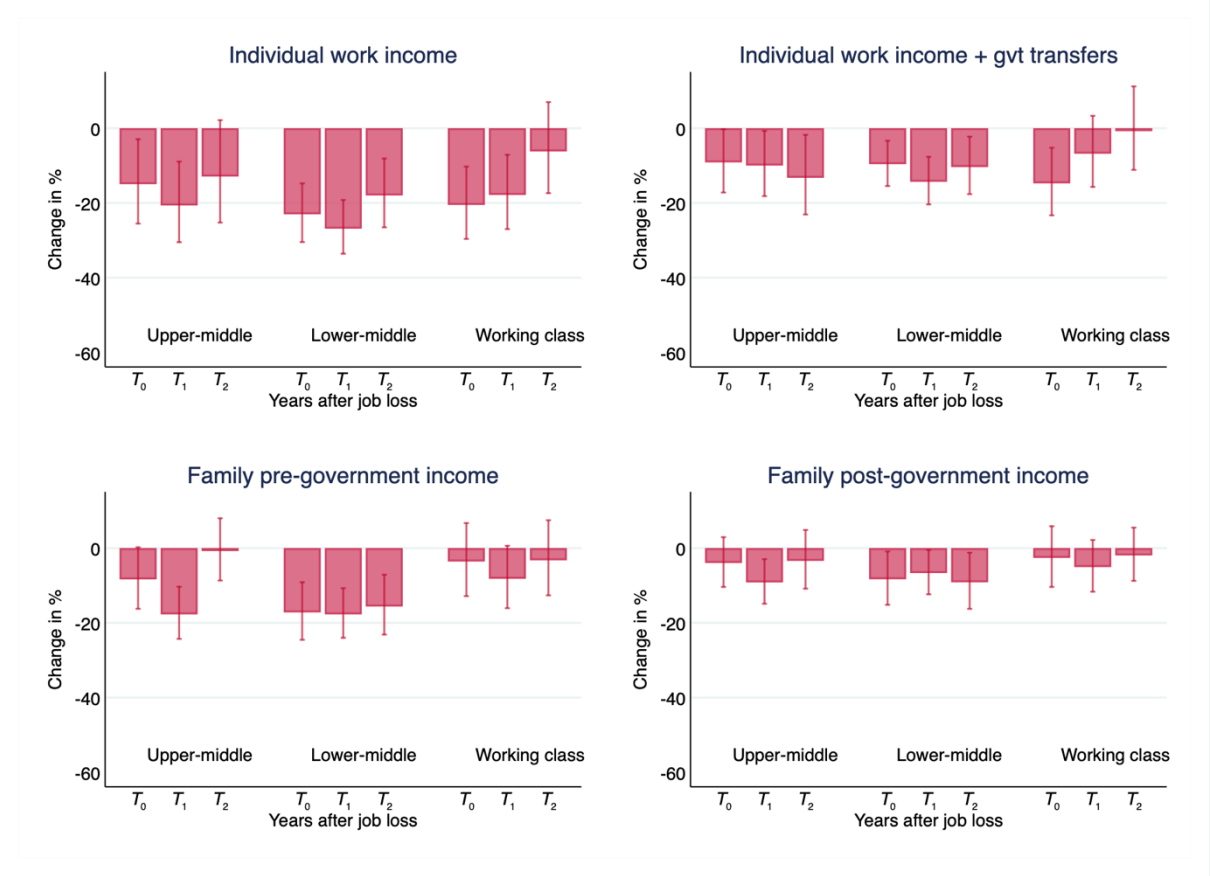


Table 2 presents again how the welfare state reduces income losses for the three classes at the individual and household level. In the United Kingdom, the effect of government benefits is somewhat stronger for the upper-middle and, above all, lower-middle class than the working class when looking at the individual level. However, at the level of the household, state transfers are more consequential as an income stabilizer for the working class than either the lower-middle or upper-middle classes, where taxes paid and transfers received seem to cancel each other out. This is not surprising given that housing benefits, exemptions from health costs and local taxes in the UK are all based on means-testing and set at the household level, therefore being of greater benefit to poorer households than middle-class households.

In Switzerland, the welfare state does not only provide a stronger buffer than in the United Kingdom, but its effect is also much more even across social classes – both at the individual

and household level. Given the variance over the years, the safest conclusion is that the three classes benefit to a similar extent from state transfers after an unemployment spell.

Table 2. *The contribution of state transfers and taxes to income after an unemployment spell at the individual and household level for social classes (change in income in percentage points)*

	(1) Individual welfare buffer: Post-government minus pre-government individual labour income			**(2) Household welfare buffer: Post-government minus pre-government household income**		
	United Kingdom					
	Upper-middle	Lower-middle	Working class	Upper-middle	Lower-middle	Working class
T_0	0.07	0.10	0.05	0.00	0.02	0.02
T_1	0.09	0.11	0.04	0.00	0.02	0.06
T_2	0.07	0.13	0.06	0.00	0.00	0.03
	Switzerland					
	Upper-middle	Lower-middle	Working class	Upper-middle	Lower-middle	Working class
T_0	0.07	0.11	0.06	0.05	0.09	0.03
T_1	0.15	0.12	0.15	0.16	0.17	0.06
T_2	0.06	0.09	0.11	0.00	0.11	0.02

Discussion

A central question raised by our paper is whether these income losses vary across social classes. Contrary to our expectation, the empirical evidence does not provide much support for the existence of heterogeneous treatment effects. Our first hypothesis expected people in advantageous class positions to fare better in both countries. Yet our results indicate that income losses do not differ systematically across social strata. There are a few exceptions: The working class bears lower losses in post-government household incomes in both countries as opposed to the lower-middle and upper-middle class. This may be the consequence of a floor effect as the incomes at the bottom of the class structure fall from a lower level and the extent of this fall is limited by minimum benefit levels.

Our analysis shows that individual labour income drops in the first two years after an unemployment spell by 20% and 25% in Switzerland and by 55% and 25% in Britain. As expected by our second hypothesis, an episode of unemployment thus seems to lead to lower earnings losses in Switzerland's occupational labour market than in Britain's internal labour market, where skill transferability across firms may be more limited.

Unemployed workers in Switzerland do not only suffer lower losses in labour income, they also benefit more from the welfare state than is the case for the unemployed in the UK. Consistent with our third hypothesis, state transfers reduce income losses to a much larger extent in Switzerland than in the UK, both at the individual and household level. In the UK, government transfers make a surprisingly weak contribution to stabilizing the income of the unemployed. This leaves displaced workers with basically two options: to either return as quickly as possible to the labour market or to rely on the support of other household members. In relative terms, the pooling of income within households thus plays a larger role for income buffering in the UK than in Switzerland.

Conclusion

Our findings provide little evidence for heterogeneous income effects of unemployment on social classes. How much confidence can we place in this result? We apply a difference-in-differences design to panel data from two countries and combine fixed-effects regressions with a matching method. Still, our design only approximates a causal inference design because unemployment spells may not be exogenous to the evolution of income. This is the case if the same unobserved (and time-changing) characteristics increase the likelihood of both stagnating incomes and unemployment.

This caveat needs to be taken seriously. At the same time, researchers are more likely to mistake an effect that is actually homogeneous as being heterogeneous. This argument is made

by Richard Breen and colleagues (2015) who show that unobserved selection into the treatment group (unemployment in our case, college education in their study) increases the risk of erroneously finding *heterogeneous* causal effects (income differences across classes in our case, income differences across SES-groups in their study). To the extent that our analysis shows small differences in income losses across social classes, the safest bet is to conclude that there is not much causal heterogeneity.

The widely varying results reported in the literature – with larger income losses found for high-income households in some studies, but for low- or mid-income household in other studies – also suggest that there may be no systematic stratification of income losses after a spell of unemployment. This finding implies that the greater risk of becoming unemployed of lower classes does not automatically translate into greater vulnerability to its consequences once they are unemployed. At least for the United Kingdom and Switzerland over the last decade, our panel data provide no evidence that unemployed workers are subject to this mechanism of cumulative disadvantage.

Of course, an income loss of 20 percent may be much more hurtful for people who had very low earnings to begin with than for individuals who earned comfortable wages before becoming unemployed. Notably, an identical income drop of 20 percent may have very different consequences for economic deprivation in the upper-middle than the working class if the incomes of the latter are pushed below the poverty line. Seen in this perspective, unemployment spells are not only more frequent in the working careers of lower classes, but may also be more disruptive.

At the same time, if we measured income changes in absolute terms (and thus in Pound Sterling and Swiss Francs) rather than in relative terms (using logged income), a relative income loss of 20 per cent would show up as a substantially larger absolute fall for the upper-middle than the working class. Based on absolute measures, our results would clearly lead us

to reject the hypothesis that income losses after an unemployment spell are larger for individuals from less advantageous social classes.

While there may be disagreement on what our results mean for cumulative disadvantages, what is undisputable are the large country differences in how unemployed workers are buffered against falling incomes. The Swiss welfare state reduces the incomes losses after an unemployment spell by half, whereas the British welfare state provides minimal protection. In this sense, unemployment in the UK is a critical life event for which institutions offer little help and which exposes individuals across the class distribution to great economic insecurity.

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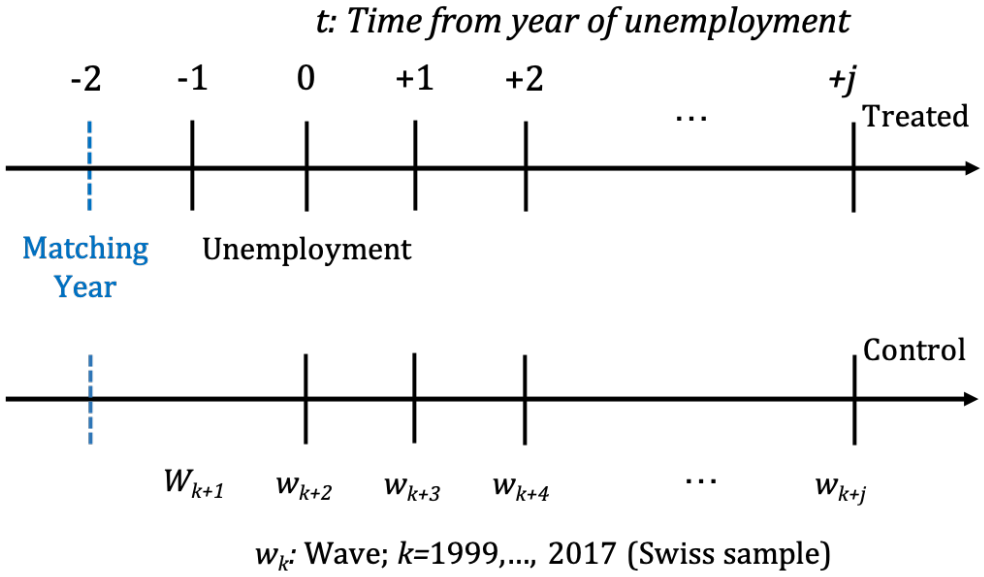
Appendix - Figures

Figure A.1: *general matching design*



w_k: Wave; k=1999,…, 2017 (Swiss sample)

Figure A.2: *Trends of individual income and post-government household income of the treatment and control group in the 5 years preceding a unemployment spell, United Kingdom*

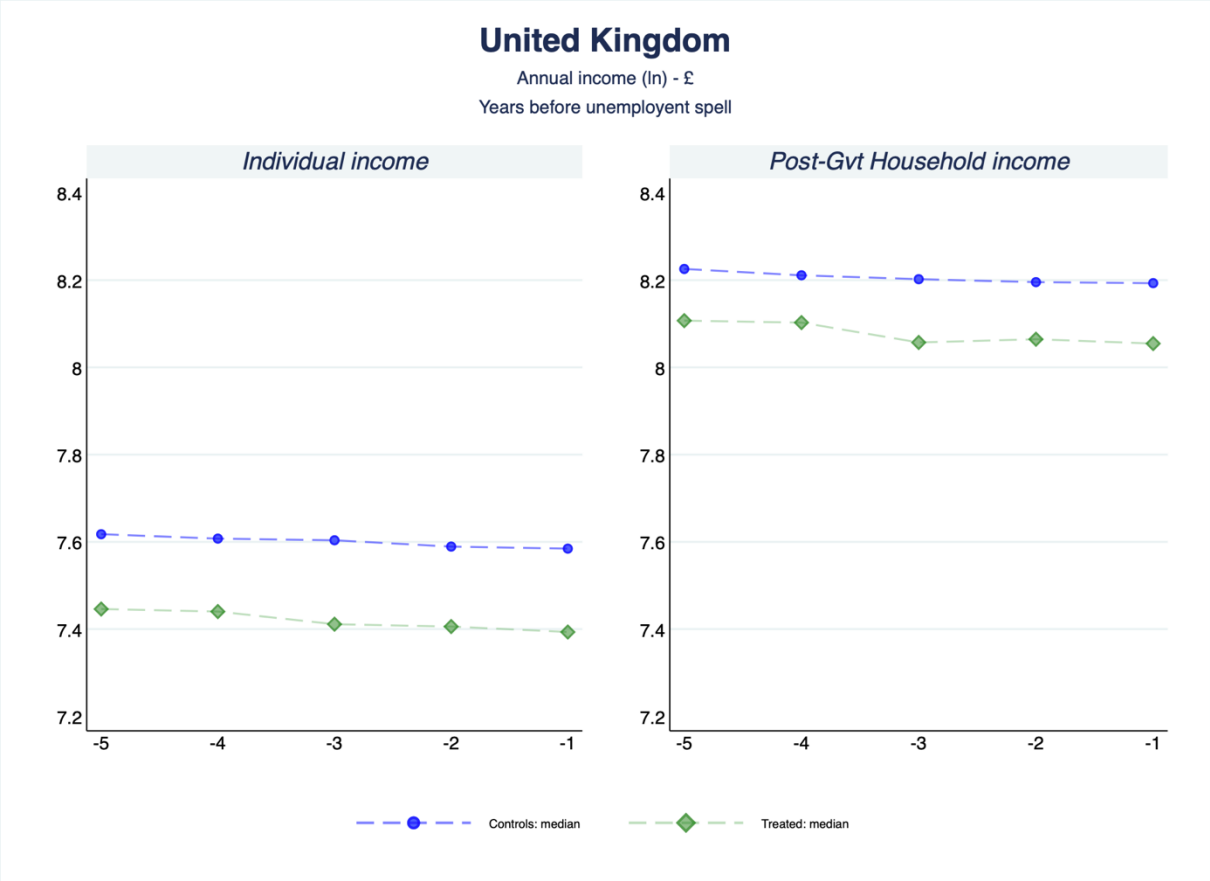
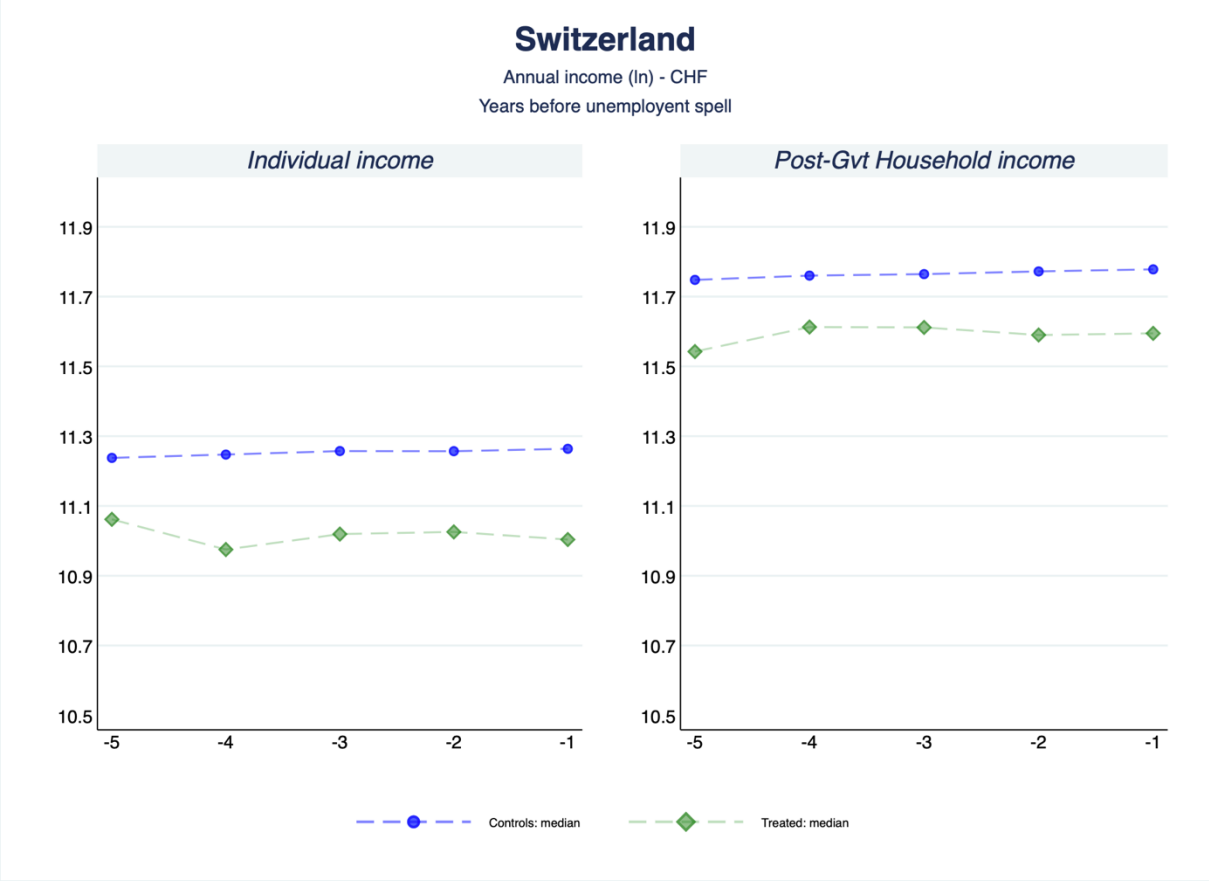


Figure A.3: *Trends of individual income and post-government household income of the treatment and control group in the 5 years preceding a unemployment spell, Switzerland*



Appendix - Tables

Table A.1: *Characteristics of treated and control group in the UK*

	Treated					Control			
	Pre-matching		Post-matching			Pre-matching		Post-matching	
	Mean	Sd	Mean	Sd	n	Mean	Sd	Mean	Sd
Age	39,08	14,24	41,36	14,23	3	42,87	10,17	43,77	10,37
Male	0,54	0,50	0,55	0,50		0,48	0,50	0,48	0,50
Partner	0,59	0,49	0,61	0,49		0,76	0,43	0,76	0,43
British	0,36	0,48	0,07	0,26		0,05	0,22	0,08	0,27
Dependent children: 0	0,66	0,47	0,66	0,47		0,51	0,50	0,53	0,50
1	0,15	0,36	0,14	0,35		0,19	0,40	0,19	0,39
2	0,14	0,34	0,14	0,35		0,20	0,40	0,20	0,40
3+	0,05	0,23	0,06	0,24		0,09	0,29	0,09	0,29
Oesch groups: Lower	0,24	0,43	0,22	0,42		0,25	0,44	0,26	0,44
Intermediate	0,32	0,47	0,32	0,47		0,35	0,48	0,34	0,48
Higher	0,44	0,50	0,45	0,50		0,40	0,49	0,40	0,49
Firm size: 1 - 19	0,31	0,46	0,19	0,39		0,20	0,40	0,20	0,40
20-99	0,20	0,40	0,14	0,35		0,17	0,37	0,17	0,38
99-1000	0,31	0,46	0,20	0,40		0,31	0,46	0,31	0,46
Missing	0,18	0,39	0,47	0,50		0,32	0,47	0,31	0,46
Work hours: Full time	0,56	0,50	0,38	0,48		0,59	0,49	0,59	0,49
Part time	0,23	0,42	0,12	0,32		0,15	0,36	0,15	0,36
Missing	0,21	0,41	0,50	0,50		0,26	0,44	0,26	0,44
Health: Very well	0,12	0,32	0,07	0,26		0,17	0,37	0,15	0,36
Well	0,09	0,29	0,10	0,30		0,08	0,27	0,08	0,28
Average	0,33	0,47	0,35	0,48		0,33	0,47	0,33	0,47
Not well/ at all	0,35	0,48	0,35	0,48		0,29	0,46	0,30	0,46
Missing	0,08	0,28	0,10	0,29		0,09	0,28	0,09	0,29

Table A.2: *Characteristics of treated and control group in Switzerland*

	Treated					Control		
	Pre-matching		Post-matching			Pre-matching		Post-matching
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Age	42,51	9,84	43,34	10,44	43,90	8,84	45,44	8,92
Male	0,61	0,49	0,60	0,49	0,51	0,50	0,51	0,50
Partner	0,59	0,49	0,59	0,49	0,78	0,41	0,79	0,41
Swiss	0,82	0,38	0,83	0,37	0,97	0,16	0,97	0,16
Dependent children: 0	0,65	0,48	0,66	0,47	0,52	0,50	0,54	0,50
1	0,15	0,36	0,14	0,35	0,15	0,36	0,16	0,36
2	0,15	0,35	0,16	0,37	0,22	0,42	0,21	0,41
3+	0,05	0,22	0,04	0,19	0,11	0,31	0,09	0,29
ISEI: 1st tercile	0,31	0,46	0,30	0,46	0,27	0,44	0,27	0,44
2nd tercile	0,42	0,49	0,38	0,49	0,49	0,50	0,48	0,50
3rd tercile	0,28	0,45	0,32	0,47	0,25	0,43	0,25	0,43
Firm size: 1 – 19	0,16	0,37	0,16	0,37	0,19	0,39	0,19	0,39
20-99	0,23	0,42	0,23	0,42	0,28	0,45	0,28	0,45
99-1000	0,61	0,49	0,61	0,49	0,53	0,50	0,53	0,50
Missing	0,31	0,46	0,23	0,42	0,33	0,47	0,33	0,47
Work hours: Full time	0.42	0.49	0.34	0.47	0.39	0.49	0.43	0.49
Part time	0.41	0.49	0.28	0.45	0.55	0.50	0.52	0.50
Missing	0.18	0.37	0.39	0.49	0.06	0.24	0.06	0.23
Health: Very well	0.20	0.40	0.20	0.40	0.22	0.41	0.18	0.38
Well	0.59	0.49	0.59	0.49	0.66	0.47	0.72	0.45
Average	0.15	0.36	0.14	0.35	0.08	0.27	0.07	0.25
Not well/ at all	0.03	0.18	0.04	0.18	0.01	0.09	0.01	0.08
Missing	0.02	0.15	0.03	0.17	0.03	0.17	0.02	0.15

***Table A.3**: Descriptive statistics of individuals' characteristics by employment status*

	United Kingdom		Switzerland	
Full sample	No U/E	U/E	No U/E	U/E
Age	40,43	42,37	38,66	40,35
Gender (Male)	0,45	0,51	0,49	0,63
Partner	0,70	0,69	0,77	0,66
ISCED 1-2	0,58	0,56	0,58	0,62
ISCED 3-4	0,17	0,17	0,19	0,20
ISCED 5-6	0,25	0,28	0,23	0,18
Individuals - Matched	32272	3443	4128	436
Individuals - Not matched	27852	1355	4497	67
Episodes - Matched	33116	3932	4135	518
Episodes - Not matched	28346	1360	4579	74
Social class – Higher group	No U/E	U/E	No U/E	U/E
Age	40,65	43,58	39,35	40,52
Gender (Male)	0,54	0,56	0,33	0,45
Partner	0,76	0,74	0,79	0,67
ISCED 1-2	0,33	0,33	0,27	0,30
ISCED 3-4	0,15	0,15	0,38	0,36
ISCED 5-6	0,51	0,51	0,35	0,34
Individuals - Matched	8571	951	1181	131
Individuals - Not matched	9290	164	1297	15
Episodes - Matched	8983	1098	1183	152
Episodes - Not matched	9439	166	1318	17
Social class – Middle group	No U/E	U/E	No U/E	U/E
Age	39,83	42,18	38,43	40,35
Gender (Male)	0,34	0,37	0,61	0,71
Partner	0,70	0,69	0,75	0,64
ISCED 1-2	0,48	0,49	0,66	0,73
ISCED 3-4	0,23	0,23	0,14	0,15
ISCED 5-6	0,29	0,29	0,20	0,12
Individuals - Matched	9140	1171	1837	192
Individuals - Not matched	9588	357	2008	21
Episodes - Matched	9358	1341	1839	236
Episodes - Not matched	9758	357	2052	23
Social class – Lower group	No U/E	U/E	No U/E	U/E
Age	40,77	41,66	38,33	40,18
Gender (Male)	0,49	0,61	0,45	0,66
Partner	0,67	0,65	0,80	0,66
ISCED 1-2	0,78	0,78	0,78	0,77

ISCED 3-4	0,13	0,12	0,06	0,13
ISCED 5-6	0,08	0,10	0,16	0,10
Individuals - Matched	14561	1321	1110	113
Individuals - Not matched	8974	834	1192	31
Episodes - Matched	14775	1493	1113	130
Episodes - Not matched	9149	837	1209	34

Table A.4: *Post-matching fixed-effects regressions with the full sample in the UK*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-1}	-0,01**	-0,01***	-0,00***	-0,00***
	(0,002)	(0,002)	(0,002)	(0,001)
T_0	0,01***	0,01***	0,00	0,00***
	(0,003)	(0,002)	(0,001)	(0,001)
T_1	-0,00	-0,00	-0,01***	-0,00*
	(0,003)	(0,002)	(0,002)	(0,002)
T_2	-0,00*	-0,00*	-0,01***	-0,01***
	(0,003)	(0,002)	(0,002)	(0,002)
T_{-2}*D	0,01	0,01	0,01	-0,00
	(0,045)	(0,036)	(0,035)	(0,032)
T_0*D	-0,82***	-0,66***	-0,25***	-0,24***
	(0,037)	(0,024)	(0,015)	(0,013)
T_1*D	-0,35***	-0,28***	-0,16***	-0,13***
	(0,031)	(0,021)	(0,016)	(0,014)
T_2*D	-0,30***	-0,21***	-0,15***	-0,13***
	(0,032)	(0,022)	(0,019)	(0,017)
Age	0,11***	0,10***	0,08***	0,08***
	(0,013)	(0,010)	(0,011)	(0,009)
Age^2	-0,00***	-0,00***	-0,00***	-0,00***
	(0,000)	(0,000)	(0,000)	(0,000)
Wave 2	-0,02	-0,00	-0,07***	-0,06***
	(0,015)	(0,011)	(0,011)	(0,009)
Wave 3	-0,04	-0,02	-0,11***	-0,08***
	(0,026)	(0,019)	(0,019)	(0,016)
Wave 4	-0,05	-0,03	-0,13***	-0,11***
	(0,036)	(0,028)	(0,028)	(0,023)
Wave 5	-0,06	-0,04	-0,13***	-0,11***
	(0,048)	(0,037)	(0,037)	(0,030)
Wave 6	-0,01	-0,00	-0,10**	-0,08**

	(0,058)	(0,045)	(0,046)	(0,036)
Wave 7	-0,01**	-0,01***	-0,00***	-0,00***
	(0,002)	(0,002)	(0,002)	(0,001)
Observations	395354	395354	395354	395354
R-Squared	0,01	0,02	0,02	0,03
Number of id	35715	35715	35715	35715
Rho	0,863	0,751	0,822	0,815
Sigma	1,736	0,959	1,065	0,847

Table A.5: *Post-matching fixed-effects regressions with the full sample in Switzerland*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-2}	-0,00	-0,00	0,00	0,00
	(0,007)	(0,008)	(0,006)	(0,006)
T_0	0,00	0,01	-0,00	-0,00
	(0,008)	(0,007)	(0,006)	(0,006)
T_1	-0,00	0,02**	0,00	-0,00
	(0,009)	(0,008)	(0,006)	(0,006)
T_2	-0,00	0,02**	-0,01	-0,01*
	(0,010)	(0,009)	(0,007)	(0,007)
$T_{-2}*D$	0,05	0,03	0,02	0,01
	(0,030)	(0,023)	(0,026)	(0,020)
T_0*D	-0,22***	-0,13***	-0,12***	-0,06**
	(0,036)	(0,025)	(0,027)	(0,022)
T_1*D	-0,30***	-0,16***	-0,21***	-0,10***
	(0,047)	(0,034)	(0,032)	(0,024)
T_2*D	-0,16***	-0,13***	-0,12***	-0,08***
	(0,050)	(0,039)	(0,035)	(0,029)
Age	0,07***	0,05***	0,04***	0,06***
	(0,014)	(0,013)	(0,015)	(0,013)
Age^2	-0,00***	-0,00***	-0,00***	-0,00***
	(0,000)	(0,000)	(0,000)	(0,000)
Years 2001-2002	0,00	-0,00	0,02	0,02
	(0,022)	(0,020)	(0,018)	(0,017)
Years 2003-2004	-0,04	-0,03	-0,00	0,02
	(0,034)	(0,029)	(0,027)	(0,024)
Years 2005-2006	-0,06	-0,04	0,00	0,01
	(0,041)	(0,039)	(0,035)	(0,031)
Years 2007-2008	-0,06	-0,03	0,03	0,04
	(0,053)	(0,050)	(0,043)	(0,038)
Years 2009-2010	-0,06	-0,01	0,02	0,04
	(0,064)	(0,059)	(0,051)	(0,045)
Years 2011-2012	-0,06	-0,01	0,05	0,05
	(0,074)	(0,068)	(0,056)	(0,051)
Years 2013-2014	0,00	0,03	0,05	0,03
	(0,087)	(0,077)	(0,061)	(0,058)
Years 2015-2016	0,02	0,04	0,07	0,01
	(0,098)	(0,087)	(0,073)	(0,067)
Observations	48363	48363	48363	48363

R-Squared	0,04	0,04	0,02	0,04
Number of id	4564	4564	4564	4564
Rho	0,809	0,815	0,713	0,722
Sigma	0,910	0,884	0,644	0,626

Table A.6: *Post-matching fixed-effects regressions for the upper-middle class in the UK*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-1}	-0,01**	-0,01***	-0,01**	-0,00**
	(0,003)	(0,003)	(0,002)	(0,002)
T_0	0,01***	0,01***	0,00	0,00
	(0,003)	(0,003)	(0,002)	(0,002)
T_1	-0,01*	-0,00	-0,00	-0,00
	(0,003)	(0,003)	(0,002)	(0,002)
T_2	-0,01***	-0,01**	-0,01***	-0,01***
	(0,004)	(0,004)	(0,003)	(0,002)
T_{-2}*D	-0,01	-0,01	-0,01	-0,02
	(0,050)	(0,042)	(0,023)	(0,022)
T_0*D	-1,02***	-0,85***	-0,32***	-0,32***
	(0,078)	(0,056)	(0,033)	(0,032)
T_1*D	-0,47***	-0,34***	-0,19***	-0,19***
	(0,064)	(0,051)	(0,034)	(0,032)
T_2*D	-0,37***	-0,28***	-0,20***	-0,20***
	(0,070)	(0,052)	(0,038)	(0,036)
Age	0,14***	0,13***	0,10***	0,10***
	(0,025)	(0,024)	(0,018)	(0,016)
Age^2	-0,00***	-0,00***	-0,00***	-0,00***
	(0,000)	(0,000)	(0,000)	(0,000)
Wave 2	-0,04	-0,03	-0,07***	-0,06***
	(0,028)	(0,027)	(0,017)	(0,016)
Wave 3	-0,10**	-0,08	-0,11***	-0,09***
	(0,048)	(0,047)	(0,031)	(0,028)
Wave 4	-0,15**	-0,11	-0,15***	-0,13***
	(0,069)	(0,068)	(0,045)	(0,040)
Wave 5	-0,18*	-0,13	-0,15***	-0,12**
	(0,093)	(0,092)	(0,059)	(0,052)
Wave 6	-0,15	-0,10	-0,13*	-0,09
	(0,113)	(0,112)	(0,073)	(0,065)
Wave 7	-0,20	-0,13	-0,15*	-0,10
	(0,135)	(0,133)	(0,088)	(0,078)
Observations	117649	117649	117649	117649
R-Squared	0,02	0,02	0,01	0,02
Number of id	9522	9522	9522	9522
Rho	0,837	0,777	0,827	0,819
Sigma	1,317	1,018	0,885	0,813

Table A.7: *Post-matching fixed-effects regressions for the lower-middle class in the UK*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-1}	-0,00	-0,00	-0,00	0,00
	(0,005)	(0,003)	(0,003)	(0,002)
T_0	0,02***	0,01***	0,00	0,00**
	(0,005)	(0,003)	(0,003)	(0,002)
T_1	0,01	0,00	-0,00	-0,00
	(0,004)	(0,003)	(0,003)	(0,002)
T_2	0,00	0,00	-0,00	-0,00*
	(0,004)	(0,003)	(0,003)	(0,003)
$T_{-2}*D$	-0,03	-0,02	-0,02	-0,02
	(0,051)	(0,037)	(0,026)	(0,026)
T_0*D	-0,97***	-0,74***	-0,25***	-0,22***
	(0,069)	(0,045)	(0,025)	(0,023)
T_1*D	-0,55***	-0,37***	-0,17***	-0,15***
	(0,067)	(0,044)	(0,029)	(0,027)
T_2*D	-0,50***	-0,30***	-0,16***	-0,15***
	(0,071)	(0,043)	(0,036)	(0,034)
Age	0,07***	0,07***	0,06***	0,05***
	(0,023)	(0,016)	(0,019)	(0,014)
Age^2	-0,00***	-0,00***	-0,00***	-0,00***
	(0,000)	(0,000)	(0,000)	(0,000)
Wave 2	-0,02	-0,00	-0,07***	-0,06***
	(0,023)	(0,017)	(0,019)	(0,015)
Wave 3	-0,02	-0,01	-0,09***	-0,07***
	(0,044)	(0,029)	(0,033)	(0,026)
Wave 4	0,01	-0,01	-0,10**	-0,08**
	(0,063)	(0,042)	(0,049)	(0,037)
Wave 5	0,02	-0,00	-0,08	-0,07
	(0,083)	(0,054)	(0,064)	(0,049)
Wave 6	0,09	0,05	-0,03	-0,02
	(0,102)	(0,068)	(0,078)	(0,059)
Wave 7	0,11	0,06	-0,02	-0,02
	(0,122)	(0,082)	(0,094)	(0,071)
Observations	129195	129195	129195	129195
R-Squared	0,01	0,02	0,01	0,01
Number of id	10311	10311	10311	10311
Rho	0,825	0,769	0,811	0,821
Sigma	1,521	0,990	0,996	0,899

Table A.8: *Post-matching fixed-effects regressions for the working class in the UK*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-1}	-0,00	-0,01***	-0,00	-0,01***
	(0,005)	(0,003)	(0,003)	(0,002)
T_0	0,01*	0,01***	-0,00	-0,00
	(0,003)	(0,002)	(0,002)	(0,002)
T_1	-0,01	-0,00	-0,01***	-0,00
	(0,005)	(0,002)	(0,003)	(0,003)
T_2	-0,00	-0,00	-0,01**	-0,01**
	(0,004)	(0,003)	(0,003)	(0,003)
T_{-2}*D	-0,02	-0,03	-0,02	-0,02
	(0,038)	(0,030)	(0,024)	(0,018)
T_0*D	-0,59***	-0,50***	-0,22***	-0,20***
	(0,053)	(0,033)	(0,028)	(0,022)
T_1*D	-0,27***	-0,21***	-0,14***	-0,08***
	(0,047)	(0,032)	(0,030)	(0,022)
T_2*D	-0,26***	-0,18***	-0,14***	-0,10***
	(0,053)	(0,038)	(0,035)	(0,028)
Age	0,12***	0,10***	0,07***	0,08***
	(0,023)	(0,016)	(0,021)	(0,015)
Age^2	-0,00***	-0,00***	-0,00***	-0,00***
	(0,000)	(0,000)	(0,000)	(0,000)
Wave 2	-0,01	-0,02	-0,08***	-0,06***
	(0,028)	(0,016)	(0,021)	(0,016)
Wave 3	-0,04	-0,03	-0,13***	-0,10***
	(0,044)	(0,028)	(0,037)	(0,028)
Wave 4	-0,08	-0,06	-0,16***	-0,13***
	(0,062)	(0,041)	(0,054)	(0,041)
Wave 5	-0,10	-0,09*	-0,17**	-0,15***
	(0,081)	(0,054)	(0,071)	(0,053)
Wave 6	-0,05	-0,06	-0,14	-0,13**
	(0,098)	(0,067)	(0,088)	(0,065)
Wave 7	-0,07	-0,08	-0,15	-0,15*
	(0,117)	(0,080)	(0,105)	(0,077)
Observations	148510	148510	148510	148510
R-Squared	0,01	0,01	0,01	0,01
Number of id	15882	15882	15882	15882
Rho	0,898	0,788	0,843	0,870
Sigma	2,027	0,903	1,197	1,029

Table A.9: *Post-matching fixed-effects regressions for the upper-middle class in Switzerland*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-2}	0,01	0,01	0,01	0,01
	(0,015)	(0,014)	(0,010)	(0,009)
T_0	0,03	0,03	0,00	0,00
	(0,017)	(0,017)	(0,013)	(0,013)
T_1	0,04***	0,04**	0,01	0,01
	(0,016)	(0,017)	(0,016)	(0,015)
T_2	0,05**	0,05**	-0,01	-0,01
	(0,020)	(0,020)	(0,018)	(0,018)
T_{-2}*D	0,08	0,05	0,08	0,06*
	(0,056)	(0,043)	(0,042)	(0,033)
T_0*D	-0,16**	-0,09*	-0,09*	-0,04
	(0,067)	(0,047)	(0,046)	(0,036)
T_1*D	-0,24***	-0,10**	-0,20***	-0,10***
	(0,091)	(0,063)	(0,058)	(0,044)
T_2*D	-0,14	-0,14	-0,01	-0,04
	(0,104)	(0,081)	(0,056)	(0,054)
Age	0,12***	0,11***	0,03	0,03
	(0,024)	(0,023)	(0,034)	(0,034)
Age^2	-0,00***	-0,00***	-0,00	-0,00
	(0,000)	(0,000)	(0,000)	(0,000)
Years 2001-2002	0,01	0,02	0,03	0,04
	(0,032)	(0,031)	(0,041)	(0,041)
Years 2003-2004	-0,07	-0,05	0,01	0,04
	(0,056)	(0,053)	(0,056)	(0,055)
Years 2005-2006	-0,09	-0,05	-0,05	-0,01
	(0,069)	(0,065)	(0,062)	(0,061)
Years 2007-2008	-0,13	-0,09	-0,08	-0,02
	(0,087)	(0,083)	(0,071)	(0,069)
Years 2009-2010	-0,12	-0,08	-0,08	-0,02
	(0,104)	(0,099)	(0,087)	(0,084)
Years 2011-2012	-0,12	-0,07	-0,04	0,01
	(0,126)	(0,120)	(0,098)	(0,095)
Years 2013-2014	0,01	0,01	0,01	0,01
	(0,015)	(0,014)	(0,010)	(0,009)
Years 2015-2016	0,03	0,03	0,00	0,00
	(0,017)	(0,017)	(0,013)	(0,013)
Observations	13429	13429	13429	13429

R-Squared	0,06	0,05	0,03	0,04
Number of id	1312	1312	1312	1312
Rho	0,769	0,781	0,674	0,673
Sigma	0,817	0,785	0,587	0,557

Table A.10: *Post-matching fixed-effects regressions for lower-middle class in Switzerland*

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-2}	-0,02**	-0,02**	-0,01	-0,01
	(0,009)	(0,010)	(0,009)	(0,009)
T_0	-0,00	-0,01	-0,00	-0,00
	(0,007)	(0,007)	(0,008)	(0,009)
T_1	0,00	-0,00	-0,00	-0,00
	(0,010)	(0,010)	(0,009)	(0,009)
T_2	-0,00	-0,00	-0,01	-0,01
	(0,012)	(0,012)	(0,010)	(0,010)
$T_{-2}*D$	0,08*	0,05	-0,02	0,01
	(0,043)	(0,031)	(0,044)	(0,035)
T_0*D	-0,27***	-0,11***	-0,19***	-0,09**
	(0,051)	(0,034)	(0,047)	(0,039)
T_1*D	-0,33***	-0,17***	-0,20***	-0,07**
	(0,068)	(0,049)	(0,054)	(0,041)
T_2*D	-0,22***	-0,13***	-0,18***	-0,10**
	(0,075)	(0,056)	(0,063)	(0,054)
Age	0,04*	0,03	0,05***	0,06***
	(0,021)	(0,020)	(0,015)	(0,015)
Age^2	-0,00	-0,00	-0,00***	-0,00***
	(0,000)	(0,000)	(0,000)	(0,000)
Years 2001-2002	0,01	0,01	0,01	0,01
	(0,029)	(0,029)	(0,022)	(0,022)
Years 2003-2004	-0,03	0,00	-0,00	0,02
	(0,037)	(0,037)	(0,032)	(0,032)
Years 2005-2006	-0,07	-0,03	-0,00	0,02
	(0,050)	(0,048)	(0,043)	(0,043)
Years 2007-2008	-0,04	0,00	0,03	0,06
	(0,065)	(0,063)	(0,055)	(0,054)
Years 2009-2010	-0,01	0,05	0,04	0,08
	(0,079)	(0,076)	(0,066)	(0,065)
Years 2011-2012	-0,02	0,06	0,06	0,07
	(0,091)	(0,087)	(0,076)	(0,075)
Years 2013-2014	-0,02**	-0,02**	-0,01	-0,01
	(0,009)	(0,010)	(0,009)	(0,009)
Years 2015-2016	-0,00	-0,01	-0,00	-0,00
	(0,007)	(0,007)	(0,008)	(0,009)
Observations	22213	22213	22213	22213

R-Squared	0,04	0,03	0,03	0,04
Number of id	2029	2029	2029	2029
Rho	0,811	0,820	0,714	0,734
Sigma	0,872	0,848	0,632	0,628

Table A.11: Post-matching fixed-effects regressions for the working class in Switzerland

	Individual Labor income	Individual labor income +transfers	Household pre-government income	Household post-government income
T_{-2}	0,01	0,01	0,02*	0,02*
	(0,020)	(0,020)	(0,013)	(0,013)
T_0	0,03*	0,03*	-0,01	-0,01
	(0,017)	(0,017)	(0,013)	(0,012)
T_1	0,03	0,03	-0,00	-0,00
	(0,020)	(0,020)	(0,015)	(0,013)
T_2	0,03	0,03	-0,02	-0,02
	(0,024)	(0,023)	(0,018)	(0,015)
$T_{-2}*D$	0,03	-0,01	-0,01	-0,04
	(0,058)	(0,051)	(0,048)	(0,039)
T_0*D	-0,23***	-0,16***	-0,04	-0,03
	(0,062)	(0,055)	(0,051)	(0,043)
T_1*D	-0,21***	-0,08	-0,09	-0,05
	(0,082)	(0,067)	(0,059)	(0,047)
T_2*D	-0,08	-0,03	-0,04	-0,04
	(0,084)	(0,072)	(0,068)	(0,047)
Age	0,02	0,03	-0,00	0,03
	(0,032)	(0,031)	(0,053)	(0,036)
Age^2	-0,00	-0,00	-0,00	-0,00
	(0,000)	(0,000)	(0,001)	(0,000)
Years 2001-2002	-0,01	-0,03	0,06	0,03
	(0,049)	(0,047)	(0,041)	(0,035)
Years 2003-2004	-0,01	-0,03	0,04	0,02
	(0,071)	(0,070)	(0,067)	(0,048)
Years 2005-2006	-0,03	-0,04	0,12	0,07
	(0,100)	(0,098)	(0,096)	(0,069)
Years 2007-2008	-0,00	-0,03	0,21*	0,14*
	(0,128)	(0,126)	(0,119)	(0,084)
Years 2009-2010	0,01	-0,01	0,22	0,14
	(0,152)	(0,150)	(0,136)	(0,099)
Years 2011-2012	0,03	0,00	0,27*	0,17
	(0,169)	(0,166)	(0,140)	(0,107)
Years 2013-2014	0,01	0,01	0,02*	0,02*
	(0,020)	(0,020)	(0,013)	(0,013)
Years 2015-2016	0,03*	0,03*	-0,01	-0,01
	(0,017)	(0,017)	(0,013)	(0,012)
Observations	12158	12158	12158	12158
R-Squared	0,04	0,04	0,01	0,02

Number of id	1223	1223	1223	1223
Rho	0,834	0,836	0,696	0,704
Sigma	0,978	0,962	0,649	0,631