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HOUSEHOLD NONEMPLOYMENT, SOCIAL RISKS AND INEQUALITY IN EUROPE

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Abstract

This dissertation explores interactions between households, states and markets and their relation to socio-economic inequalities among working-age households. The focus lies on three aspects that are addressed in three different empirical studies: the importance of the welfare state, economic risks and opportunities within households, and the link between these two aspects and broader patterns of inequality at the societal level. The first paper analyses the relation between the regulation of social benefits, social risks, and household nonemployment in 20 European countries using internationally comparative institutional and survey data. The study reveals that eligibility conditions and activation policy vary systematically with the effect of social risks on the probability of household nonemployment. The strength and direction of influence depends on the specific policy area and risk factor. The second research paper analyses the duration of household nonemployment for British and German couples from the early 1990s to the mid-2000s. Dual joblessness has become longer over time, which is related to changes in the household composition of nonemployed couples. The third paper analyses consequences of welfare shifts between households on changing patterns of inequality between 2005 and 2010. Changes in the distribution of household employment, benefit transfers, and family types in Germany, the United Kingdom, Poland, and Spain are analysed in terms of their contribution to developments in income inequality between households. The analysis of income distributions suggests that changes in socio-demographic and economic household characteristics in a population can have a substantial impact on different income groups. The overarching conclusion of the dissertation is that certain aspects of household composition have a universal potential to lower households' economic activity and welfare but that the impact of these factors varies strongly according to the broader context in which the households are situated. Social policies that have the potential to reduce inequalities between households need to consider possible adverse effects on economic risk structures and spill-over effects to other areas of social protection. Future research should continue studying the household's role in relation to the market, the state, and individual needs and resources; incorporate additional economic and welfare regime aspects into the analyses; and explore further statistical tools to do so.

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Preface

The following paper provides the theoretical and conceptual framework for the dissertation "Household Nonemployment, Social Risks and Inequality in Europe", which was prepared at the Universities of Mannheim and Luxembourg[a] under the joint supervision of Bernhard Ebbinghaus and Louis Chauvel. The purpose of the doctoral project was to better understand the role of households in structuring inequalities in terms of labour market access, economic risks, and social rights among the working-age population. The project focussed on three main research questions:

- How is the context of social protection related to international variation in household nonemployment?
- What factors influence the duration of household nonemployment in different institutional contexts?
- How does the distribution of employment across households influence income inequality in a given context of family structures and social protection?

In order to answer these questions, three empirical studies were conducted in the form of separate research papers. The framework paper provides a background to these studies, clarifies their relation in theoretical terms, and discusses the results. The three research papers can be found at the end of this manuscript under the following titles:

1) Activating households: Nonemployment risks and social benefits in Europe
2) The duration of couples' nonemployment in the United Kingdom and Germany: Household composition, individual resources and social policy
3) The many shapes of the welfare triangle: How employment, family structures and welfare rights relate to changes in the distribution of household income in different countries

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Framework

1. Introduction

In sociology as well as economics and social policy studies, household nonemployment has been identified as an important element for understanding the distribution of poverty risks and social exclusion within society. In modern societies, earnings from employment play the central role in an individual's material position and well-being. The amount of market income at a given point in time also influences individuals' ability to save for times of need, afford health care and participate in leisure activities and social life. A lack of employment can have severe consequences: Long-term unemployment has been shown to reduce physical and mental health, leading to negative spill-over effects on the health of unemployed individuals' spouses (Marcus 2013). Persons living in nonemployed households show an increased risk of poverty and (in some countries) material deprivation (de Graaf-Zijl and Nolan 2011). Children and adolescents living in households with either one or both parents in long-term unemployment have a reduced probability of attaining higher secondary education later on and increased chances of being nonemployed as young adults (Berloffa, Matteazzi and Villa 2016, Gebel 2011). The family is thus crucial for understanding socio-economic inequalities and their reproduction. As Albertini (2008, p. 286) highlights,

> "The nexus between the household and economy is implicit in the two terms themselves (the Greek word *oikonomia* means house or household administration). The relevance of this nexus has also been much stressed in sociological research; in fact, since its origins, sociology has paid much attention to the study of the economic role of the family."

This role was more apparent in pre-industrial societies and even up until the mid-20th century before the steep rise of female employment. Nevertheless, the household is still an "important economic actor whose decisions and behavior directly affect the welfare state and the market". Moreover, "the family remains the main unit of redistribution of economic resources, and of caring and domestic services (…) and the most important unit of production of in-kind income" (ibid).

Therefore, when assessing the financial and social possibilities offered by employment and the consequences of not having a job, the study of the household context is of great relevance. The household's special role within countries' welfare production systems makes it the "merging point" at which individual resources and needs meet the

opportunities and restraints offered by the market and the state. Modern welfare states have developed compensation mechanisms that support or substitute families' possibilities to offset negative consequences of job loss within their households. In some cases, however, family- and welfare state support mechanisms are insufficient to keep households employed and/or out of poverty. Some countries manage to protect against certain situations of need in certain household types better than others. The effects of labour market dynamics on households depend on family structures and institutional arrangements around work and welfare. Inequality between households based on individual characteristics and their combination determines the distribution of labour market chances within a country, and of welfare state redistribution. The institutional interplay within welfare production systems can reduce inequality in life chances but can also create new types of inequality or foster its reproduction.

This doctoral project therefore aimed at investigating the household's role in structuring socio-economic inequality while taking the joint influence of labour markets and welfare states into account. In the framework of this project, household worklessness is considered a manifestation of social risks, which are defined as situations of individual disadvantage leading to welfare loss (Pintelon et al. 2013). These risks are stratified in society and relate to broader inequalities, e.g., between educational and occupational groups, gender and cohorts. High levels of inequality are associated with higher levels of poverty and lower levels of average health and social peace (Chauvel and Leist 2015; Chakravarty 2009). This societal cost of inequality therefore justifies the study of its underlying causes.

The three analytical papers of the dissertation explore the interactions between households, states and markets and their relation to socio-economic inequalities. The analyses focus on the working-age population, i.e., pensioners and student households are excluded in order to focus on the population groups that are most dependent on labour market income. The first paper addresses the question of ***how the context of social protection influences the risk of household nonemployment***. It analyses the relation between the regulation of social benefits, social risks and household nonemployment in 20 European countries using data from comparative institutional databases and EU-SILC (European Union Statistics on Income and Living Conditions)[1].

[1] http://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-

The focus is on interactions between benefit conditionality and household-level labour market risks related to family composition, health, age and education. The benefits of interest are in policy areas that address these risks either by promoting employability or by compensating for income losses induced by these risks. The specific policy measures studied include the strictness of activation within unemployment benefits and social assistance as well as eligibility restrictions towards non-activating minimum income protection, disability pensions, and early retirement programmes. The study reveals that these policies vary systematically with the effect of social risks on the risk of household nonemployment.

While the first paper analyses the link between household nonemployment and institutional configurations at the macro level, the second paper focuses on the household level from a long-term perspective. The main interest lies in ***what influences the duration of households' nonemployment in different institutional contexts***. In a comparative study of the German Socio-Economic Panel and the British Household and Population Survey[2], the duration of household nonemployment is analysed from the early 1990s to the mid-2000s. Focussing on couples, the chances of ending joint worklessness are analysed in relation to family composition, both partners' educational resources and work experience. In addition, the persistence of dual joblessness is compared between time periods before and after reforms that changed the national systems of unemployment and in-work benefits. The analysis shows that couples' nonemployment has become lengthier over time and that this prolonging of spells is related to changes in the family constellations of nonemployed couples.

Changing family constellations as well as changes in the distribution of social benefits and their relation to household employment are the subject of the third paper. Again taking a long-term perspective, the study analyses the relation between these socio-economic and demographic changes and inequality at the macro level. The main interest of the study lies in ***how the distribution of employment across households influences income inequality in a given context of family structures and social protection***. Using EU-SILC data for 2005/2006 and 2010/2011, between-household inequality in different parts of the income distribution is analysed for Germany, the United Kingdom, Poland and Spain. The study explores how changes in the distribution of household

conditions.

[2] For more information, see http://www.diw.de/en/diw_02.c.221178.en/about_soep.html and https://www.iser.essex.ac.uk/bhps.

employment, benefit transfers and family types are related to changes in the distribution of household income. Results show that the analysed countries differ in their initial inequality patterns and continued to do so in 2010. Accordingly, changes in the labour market, family structures, and welfare state support have varying impacts on inequality for different population groups.

The remaining sections of this paper are dedicated to the theoretical and conceptual framework of the dissertation and a discussion of the results. Section 2 lays down the theoretical foundation of the dissertation, and Section 3 presents the research design of the three dissertation papers. The studies' results are discussed in Section 4, and Section 5 provides a conclusion and outlook on future research.

2. Theoretical background: Households between individual labour market risks and welfare state compensation

This chapter begins by tracing the historical roots of studying household nonemployment in the social sciences and concludes that many of the elements that are crucial for understanding worklessness and its consequences were identified – or at least hinted at – very early on. These elements provide the main coordinates of this dissertation project and are further elaborated on in Sections 2.2 to 2.6. The differentiation between unemployment and other types of nonemployment is discussed in Section 2.2, as are the social rights attached to these statuses and their combination within households. Section 2.3 examines the connection between nonemployment, household structure, and social risks. How welfare states address such risks is the subject of Section 2.4, and Section 2.5 clarifies how social policies can interact within households and thereby influence their employment outcomes. Finally, the consequences of households' labour market risks and welfare policies are discussed in Section 2.6 in regard to income inequality between households.

2.1 Some ideational roots of studying household nonemployment

The majority of studies addressing employment patterns in Western countries focus on individual employment. In order to assess the conditions for employment, its distribution and its individual and societal impact, it is necessary to consider the absence of employment, as well. This has a long tradition in the social sciences, and many of the themes addressed in contemporary studies of unemployment were put on

the research agenda by 19th- and early-20th-century scholars. As a result of the industrial revolution, the impact of technological change on labour displacement was a topic of great interest for political economists and philosophers such as David Ricardo, Thomas Malthus, John Stuart Mill and Karl Marx (Woirol 1996). The matter of mass unemployment became a fundamental point in dispute of ideational debates in economics. The notion of the self-regulating nature of markets and social systems implied that long-term unemployment was mainly perceived as a matter of personal choice between work and leisure. In the Marxist understanding, a large unemployed 'labour reserve' was a genuine characteristic of capitalism and a mechanism for guaranteeing low wages.

Although classical liberal economists recognised the role of the family as an economic unit (cf., e.g., Mill 1909), they paid little attention to the impact of unemployment on the family context.

> "While contemporary liberalism is often identified as a set of ideas committed to political rights and self-determination, classical liberalism allowed for exclusion from self-determination based on what was considered to be the non-realization of human capacities for liberty and so justified exclusion based on class, race and gender; it did not recognize the barriers in the private sphere of the economy and the family to the realization of the capacities it valued in the public sphere." (O'Connor and Robinson 2008, p.32)

This stance was highly visible in the New English Poor Law of 1834 and in the establishment of work houses across Europe based on the British model. In the new industrial production system, unemployment was seen as delinquency, and working-age poverty as self-induced. Europe's approach to poverty and unemployment changed over the second half of the 19th century with increased 'cross-fertilisation' between liberal, socialist, and conservative (i.e., Christian-familist) ideas (O'Connor and Robinson 2008, Opielka 2008). The disruption of old societal structures and rural exodus led to concentrated poverty in industrial cities. The persistency of the 'social question' and the rise of the labour movement drew public attention towards the consequences of poverty for public health and social peace. Across Europe, municipalities, churches, and trade unions established relief funds against work incapacity and unemployment. In Germany, the first social insurance systems served to appease the working class while suppressing the labour movement. In other countries (e.g., France, Belgium, Denmark and Finland), union-based self-help developed into national, state-supported systems of

voluntary unemployment insurance (Vandale 2006). Statistical studies on poverty were initiated from members of the socialist movement, communal charity organisations and public officials alike (Pankoke and Sachse 1992). The study that gave way to the (first, local) Ghent system of unemployment insurance, for example, was based on a social investigation that was commissioned by the city council of Ghent after an initiative by the labour unions (Vandale 2006, p. 648). In England, Booth's and Rowntree's pioneering works in the 1880s and 1890s attempted to create an objective definition of poverty in terms of minimum subsistence income. This 'poverty line' allowed for a quantitative assessment of the poor population and led to the insight that poverty risks varied over the life course (Glennerster 2004). Because the studies were based on household surveys, they were among the first to draw attention to the family aspects of material need. These ideas had a decisive impact on the liberal welfare reforms between 1906 and 1914, one of which was the introduction of public unemployment insurance. This development was accompanied by discussions on the insurability of different employment risks and also raised concerns that benefits might diminish individuals' need and motivation to work (Llewellyn Smith 1910).[3]

The emerging systems of unemployment protection thus represent a manifestation of a new kind of liberalism that "argued for a lessening of the consequences of inequality" but "favoured inequality on economic incentive grounds" (O'Connor and Robinson 2008, p. 35). Keynesian liberalism can be seen as continuation of this logic. As it accepts the possibility of long-term market equilibria without full employment, state-intervention is seen as a legitimate means of avoiding market failure or correcting for its consequences (p.36, ibid). Welfare states after World War II adapted this principle to various degrees, along with ideas of universalist, citizenship-based rights and conservative-familist approaches to social security, based on national political, economic and cultural background (Esping-Andersen 1990).

In the same decade that Keynes (1936) published his *The General Theory of Employment, Interest and Money*, the Great Depression created new interest in unemployment and its social consequences among sociologists and social psychologists. In comparison with the Rowntree study 30 years earlier, the household context shifted

[3]The relationship between unemployment and benefit levels, wages and price levels was vividly discussed by economists in the 1920s and 1930s (Pigou 1933, Keynes 1936, Hutt 1939).

even further to the centre of attention, as did the status and identity of the unemployed within society. Marie Jahoda, Paul Lazarsfeld and Hans Zeisel, for example, studied the effects of unemployment in the Austrian village of Marienthal (Jahoda, Lazarsfeld and Zeisel 1971; Lazarsfeld 1932). The community of 1,500 inhabitants had developed around a local textile factory whose closure in 1930 had left the entire village (except for 80 persons) without a job. Using what would nowadays be described as "mixed methods approach" (Pickel 2009), the study combined several methods of data collection (e.g., observations of behaviour, households' financial accounts, and interviews) to assess the effect of mass unemployment on the material and psychological condition of the unemployed, their wives and their children. Zawadzki and Lazarsfeld (1935) analysed similar aspects in Poland using a data source that was quite unique and innovative for the time: a sample from a nation-wide collection of personal accounts of the experience of unemployment and financial hardship by the Institute for Social Economy in Warsaw. Among the topics covered in both studies were job search behaviour, general motivation and well-being, families' activities in daily life and their adaptation to low and decreasing incomes in terms of aspired and actual consumption, nutrition and health status. Due to the interest of both studies in families, they were able to describe the spill-over effects of unemployment on other family members as well as households' joint efforts to compensate for job loss, e.g., by documenting women's selling of home-produced goods. Bakke's (1934) study that combined statistical data with personal journals of unemployed men in London also deserves mentioning. The Yale-based professor investigated the effect of the British unemployment insurance on work motivation.

The title of Bakke's study, "The unemployed man", is exemplary in its predominant focus on male job loss, which was the case with most early explorations of unemployment; however, a small minority of scholars also advocated studying female labour market participation very early on. Tawney (1911), for example, analysed female unemployment, benefit receipt, and job searches in British cities. She discussed the specific problems that women faced, e.g., their engaging in mostly seasonal or low-wage work due to lack of training and childcare duties. Early sociologists were thus not completely blind to gender-specific issues. An interesting aspect of the Marienthal study was its comparison of the behaviour between the men and women in the village. The study found that men began to walk and move more slowly the longer they were

unemployed. Women, however, did not change their pace and seemed busier overall. In contrast to their husbands, they were engaged in productive activities outside of employment, such as looking after their children and running their households. The study was therefore amongst the first to differentiate between different kinds of nonemployment, its relation to gender roles and its implications for psychological well-being.

The distinction between joblessness and other types of nonemployment also took centre stage when it came to measuring unemployment. Until the 1930s, data on unemployment had hardly been representative and were mainly based on administrative accounts of labour unions or local municipalities. The first representative surveys in the US aimed at distinguishing involuntary unemployment from other types of nonemployment due to housekeeping, disability or education. This led to the distinction between "unemployment" and "inactivity" (Bancroft 1957), a terminology still widely used today, although admittedly problematic in its implications.[4]

As this short review of early research on unemployment demonstrates, the study of this subject is highly complex. Individual employment and nonemployment cannot be analysed without recognizing the multifaceted system of market forces, household structures, social norms, and (state) institutions that shape their causes and consequences, which has led to a growing sophistication in terms of the methodologies used for the analysis of joblessness. In parallel, there has been specialisation within and between the disciplines concerned with joblessness. Echoes of the aforementioned earlier works on unemployment can therefore still be found in the publications of 21st-century economists, sociologists, political scientists, and scholars of psychology and public health.

This quick historical excursion also offers a good introduction to the topics and questions addressed in this dissertation. Processes within households play a decisive role in the study of joblessness and its relation to social risks and inequality. Most

[4] It is well documented that many of those deemed "inactive" are productive within their household and wider community (Nicaise 2007). This productivity has the potential to influence households' real income in the positive. Housewives' unpaid work or their caring for relatives outside of the household, for example, makes it unnecessary to purchase domestic services from the market. Another example of active inactivity is individuals in full-time education. Although they may not be active in the labour market at present, their activity can be interpreted as an investment in future employment and wages.

studies in quantitative sociology take these processes into account by analysing individual worklessness dependent on household context, which is typically done by adding information on other household members to individual-level regression models. This dissertation aims to go beyond this approach by studying the household level directly. Analysing the meso level of households adds another perspective to what is already known about the mechanisms of nonemployment at the macro and micro levels of society. Analysing households instead of individuals is more complicated. Employment patterns between households are a result of the interplay between labour market demand, individual characteristics, family structures and state policies towards employers, employees and families. The extent and distribution of household nonemployment in a society can therefore be defined as an outcome of interactions between the institutions of the labour market, family and state at the household level. By the same token, these three areas also shape the financial impact of household nonemployment regarding households' incomes and their distribution. In order to shed light on these interdependencies, the following sections discuss aspects of labour market participation, social risks, welfare policy and inequality that are particularly relevant when studying the household level.

2.2 Unemployment, nonemployment and the household level

As mentioned above, the distinction between voluntary and involuntary joblessness caused disputes early on in the study of unemployment. Pragmatic approaches to the subject were led by the motivation to achieve useful concepts for assessing social realities and guiding policy makers' decisions concerning these realities. In order to do this, it became necessary to distinguish between persons who are out of employment but available to the labour market in principle, and those who are not. Individuals in the former category are defined as unemployed, while those in the latter can be differentiated into subgroups depending on the reason for nonemployment (Clasen et al. 2006). First, there are persons incapable of work due to severe sickness or disabilities. Second, some might pursue activities not related to employment, such as housekeeping or education. The final group consists of persons who have retired from employment. Retirement can occur at the statutory pension age or prematurely through early retirement schemes or other pathways of early exit from work (Ebbinghaus 2006, Kohli et al. 1991). Early retirement is not necessarily voluntary and may result from poor employment prospects, e.g., due to bad health or low education (Hofäcker 2010).

When attempting to measure countries' labour market performance, the focus is most often on the unemployed. For this purpose, the number of persons searching for a job is related to the total size of the working-age population; however, this indicator can be misleading about the actual labour market reserve of a country. Unemployment rates vary more across Western countries than do all categories of nonemployment taken together (Clasen et al. 2006; Erlinghagen and Knuth 2009). Individuals with the same profiles in terms of gender, education and health define themselves as unemployed in one country but incapacitated in others. This may be less related to real differences in public health and instead depend on the regulation of joblessness within countries' welfare regimes (Börsch-Supan 2011). Incapacity benefit schemes in different countries vary in terms of access criteria, i.e., the level of impairment necessary to be eligible for the benefit. In the case of insurance benefits, prior contributions play a role, as well. For those without insurance claims, some countries have installed special social assistance schemes that are often more generous than those for the general population. Some incapacity benefits may also be open to persons with partial disabilities. In other cases, individuals with some degree of work ability do not qualify for disability benefits, but instead for unemployment benefits (Mabett 2005; Maschke 2008; OECD 2010). Due to the broad definition of work ability in the German system, for example, nonemployed persons with health limitations often receive unemployment benefits. In the UK, the Netherlands, France, and Sweden, many of these individuals would be eligible for disability or partial-disability benefits. While in the latter cases, the term "hidden unemployment" has been frequently used to describe the unused labour market potential due to generous disability benefits, the case of Germanyis an example of potentially large shares of "hidden sickness" among those officially considered able to work (Beatty, Fothergill and Macmillan 2000; Brussig and Knuth 2010).

Nonemployed individuals without disabilities may also be categorised differently depending on which rules are applied to the specific benefit they receive. Until recently, older recipients of unemployment benefits had frequently been considered inactive rather than unemployed due to their low re-employment prospects and proximity to the pension age (Clasen and Clegg 2011b). In some countries, social assistance claimants are not required to register as unemployed and may therefore not consider themselves as such. This is even more likely if their benefit claim does not depend on proof of job

search or other work-related activities, which is often the case for mothers of young children (Immervoll 2009).

International variation in the composition of nonemployment is therefore also related to gender roles, policies towards families and different labour market opportunities for men and women. Female labour market participation is generally higher in countries that offer flexible working-hour arrangements, generous leave schemes, and affordable childcare services (Nieuwenhuis 2014). Women may therefore have a higher probability of considering themselves unemployed in countries in which their prospects for combining work and family duties are higher. In a context of obstacles towards combining work and care, mothers may more frequently define themselves as unavailable for work. Gendered employment outcomes and their relation to family duties point towards the relevance of the household level for assessing the causes and consequences of nonemployment. Previous research has shown that individuals' employment decisions are dependent on their household context. According to New Home Economics, the basis of a common household is defined by the joint economic production of cohabiting individuals (Becker 1965, 1985). Decisions on employment and the division of labour within households can be modelled as result of a bargaining process between their members. This negotiation factors in each individual's earnings prospects, their preferences, the budgetary needs of the household and the time needed for work unrelated to paid employment. Income needs and time constraints result from the household structure: For example, both increase if there are dependent children in the household or older persons in need of long-term care.

Due to the variety of labour market statuses that are combined within households, it is conceptually more sound to analyse *household nonemployment* rather than *household unemployment*. As Gregg and Wadsworth (2001) have demonstrated, individual and household nonemployment are two distinct indicators that measure different aspects of the labour market and social structure. Their joint investigation sheds light on the societal distribution of employment and on households' potential to compensate for individual labour market risks. This fundamental role of households constitutes the reason that household nonemployment is generally lower than individual nonemployment. Studies on the development of household nonemployment rates between the 1970s and mid-2000s have shown that fluctuations in individual nonemployment rates are not necessarily paralleled by developments in household

nonemployment. Throughout the 1980s and 1990s, household nonemployment in Great Britain and Australia followed an upwards trend that was not offset by drops in individual worklessness. In the 1990s and 2000s, Germany began to show the same pattern (Gregg, Wadsworth and Scutella 2010, p. 143). The phenomenon of a shrinking gap between individual and household nonemployment rates is generally referred to as 'polarisation'. While the number of fully employed households increases, the number of fully nonemployed households also increases or remains stable. The general cause is that macroeconomic improvements or successful employment policies do not reach households to the extent that would be expected if employment and nonemployment were distributed randomly across households.

Corluy and Vandenbrouke (2013) have found that polarisation has increased in most of the old EU member states since 1995 with the exception of the United Kingdom, where the trend towards higher polarisation came to a halt in the 2000s. The UK nevertheless remains one of the EU member states with the highest overall levels of polarisation. Greece, Spain, Italy and Luxembourg are the only EU countries with negative polarisation, which indicates that employment is spread more equally across households than it should be under the expectation of a random distribution. In contrast to other European countries, those with negative polarisation are characterized by more traditional gender roles in terms of household division of labour and by low female employment rates. However, rising female employment rates caused polarisation to gradually increase until it reached values around zero at the end of the last decade. Among the new EU member states studied by Corluy and Vandenbrouke, polarisation is generally positive but decreased in most cases between 2000 and 2008 except in Cyprus, Lithuania and Romania. These three countries differ in their overall level of polarisation. In Cyprus, polarisation is rather low, while in Lithuania and Romania, it is higher than the EU average. The highest rates of polarisation are found in Belgium and the United Kingdom, followed by Romania, Slovakia, Bulgaria and Hungary. Lower levels that are nevertheless above the EU average can be found in Germany, France, Ireland and Poland. Medium levels of polarisation (i.e., around the EU average) have been measured in Austria and the Netherlands. Portugal, Estonia and Latvia have low but positive polarisation levels (Corluy and Vandenbrouke 2013, p. 18).

Variety also prevails when examining the impact of household joblessness and low work intensity within households on their financial situation. Although living in a

workless household is clearly associated with increased poverty risks at the individual level, not all countries with higher rates of household nonemployment display higher rates of relative poverty (De Graaf-Zijl and Nolan 2011). In some countries, changes in relative poverty are related to changes in the distribution of household nonemployment, but other factors seem more important elsewhere. In most of the new EU member states, strong increases in individual employment between 2004 and 2008 have led to a reduction in household joblessness, polarisation and poverty risks, although poverty has decreased more intensely among in-work households. A reduction of household nonemployment has also contributed to falling poverty among the working-age population in the United Kingdom. Ireland is a country case with increasing household joblessness, but this was counterbalanced by the expansion of social protection during the boom period. As a result, poverty risks have decreased for the entire population. Sweden, Finland and Germany, on the other hand, have witnessed increasing poverty rates for work-poor and work-rich households (Corluy and Vandenbrouke 2013, pp. 32, 36-37).

The conclusion that can be drawn from these examples is that the financial and distributional impacts of household joblessness depend on the national context of labour market opportunities and welfare state arrangements. These elements interact with demographic factors, thus forming country-specific structures of labour market risks. Fertility and patterns of household formation determine the number of potential earners per household, and educational differences within and across households translate into varying employment and wage prospects. These inequalities form the basic coordinates of households' social risks and their potential to compensate for them. The effects of these risks unfold through their interplay with institutions in the labour market and the welfare state. Realised compensation depends on how well welfare regimes are adapted to general risk structures. As these structures have changed in many countries while polarisation has increased, the following section discusses the nature of old and new social risks and their combination within households.

2.3 Households and social risks

Following Pintelon et al. (2013, p. 54), social risks can be broadly defined as "socioeconomic circumstances associated with a significant loss of income and an increased poverty risk". As a result of long periods of economic growth and low

unemployment in many European countries, such risks were long seen as rather predictable and related to specific types of work inability: old age, disability and (temporary) job loss. Welfare state expansion in the decades following World War Two was mainly concentrated in these three areas, and social protection was generally organised around the male breadwinner model, albeit to varying degrees (Lewis 1997). This arrangement of welfare production became increasingly dysfunctional as large-scale socioeconomic developments transformed European societies from the 1970s onwards (Esping-Andersen 2009).

The industrial decline caused by technological change and increasing international competition decreased the demand for manual workers. As a consequence, structural unemployment among low-educated men increased. At the same time, the educational expansion of the 1960s caused more women to enter the labour market. This expansion – along with the decline in wages in the more service-centred economy – changed work patterns and gender roles within households. Cultural change in gender norms also led to an increase in temporary partnerships and unstable family constellations. As a result of labour market- and family changes, fertility began to drop, leading to societal ageing. The family thus decreased in importance as a legal entity and provider of social security. Simultaneously, labour markets' capacity to offer stable and sufficient income to households declined. At the macro level, mass unemployment and a shrinking working-age population endangered the financing of public social security systems (Clasen and Clegg 2011a; Esping-Andersen 2009; Nieuwenhuis 2014).

Institutional adjustment to these transformations has been slow in many European welfare regimes, and new configurations of economic and social exclusion have emerged (see Chapter 2.4). Social vulnerability in post-industrial societies is the result of a number of interacting factors that have been summarised under the term "new social risks" (Taylor-Gooby 2004). According to Ranci (2010, p. 6), "New social risks arise at the point where job insecurity, income instability, increasing fragility of family support and inertia of welfare institution intersect". Because this point of intersection is found at the household level, "the most appropriate scale of observation at which to reconstruct social vulnerability seems to be the household", which is "the basic unit for collecting and distributing resources and converting them into well-being" (ibid, p. 19). Ranci defines three "fundamental functionings" of households: 1) "the acquisition and use of resources necessary for the material survival of household members", 2) "the

management of major life events (…) that preserves the material survival of household members" and 3) "the provision of social care for dependent members (…) while material survival (and/or management of major life events) has to be guaranteed" (ibid).

Within a household, individuals' resources in terms of wealth, work ability, and education are thus employed to satisfy the material and social needs of its members. Ideally, its activities are balanced such that both social and material needs are met. Due to the socio-economic changes described above, achieving such a balance has become more difficult for many, e.g., because of unstable employment or the lack of a partner in the household to help with additional employment or care work. Such difficulties are not limited to temporary situations of income shortage. Unemployment can have scarring effects on future wages through signalling and human capital deprivation (Gangl 2006). Interrupted or precarious employment also decreases future income by preventing or cutting personal contributions to social security schemes, such as unemployment insurance or pensions (Bonoli 2006a).

Bonoli (2006b, p.7) identifies five types of social risks that are new in the sense of their being typical for post-industrial societies: difficulties with reconciling work and family, being a single parent, having a frail relative, possessing low or obsolete skills, and insufficient social security coverage. Although unemployment or individual nonemployment could be conceived as an "old social risk", the phenomenon of household nonemployment is better understood in terms of new social risk. Within households, the risk of joblessness coincides with other risk factors, such as old age, childcare needs and low education. In many cases, household nonemployment is a result of a household's inability to compensate for such risks. Therefore, aggregate household nonemployment rates may be more rigid if social risks tend to accumulate in certain households. Vandecasteele (2011) has demonstrated that job loss is a poverty-triggering event across all educational groups and social classes. For certain social groups, however, this event adds to the increased chances of poverty due to other risk factors. For singles, the risk of poverty due to job loss is greater than for persons living with a partner. This is especially true for single parents. Becoming a parent induces poverty more frequently among single women, long-term unemployed persons, persons with low education and those in unskilled manual work. Union dissolution is a poverty-triggering event, especially among women and long-term unemployed men. The consequence of risky life events thus often depends on whether other risk factors are

already present in a household. Research has shown that rather than being exposed to a single risk factor, poor households typically face situations of multiple risks. Such situations of cumulative disadvantage tend to aggravate over time (Halleröd and Bask 2008).

The increase in polarisation between work-rich and work-poor households (cf. Section 2.2), especially in cases in which falling individual nonemployment does not translate into lower household nonemployment, may be the result of such a 'clustering of risks'. Several hypotheses on this matter can be found in the literature. Over the past decades, increased educational homogamy has been observed within couples. This assortative mating is said to have led to a split within couple households between highly educated individuals with high employment and wage prospects and those with low education, employment and wages (Esping-Andersen 2007; Ultee et al. 1988). Another factor to consider is the increase in single households since the 1970s, which mainly affects single mothers and low-educated, non-partnered men. Both categories are subject to new social risks: The former are exposed to problems of work-family reconciliation, the latter to decreased demand for low-skilled labour and high precarity in the low-wage sector of the service economy (Bonoli 2006b). Statistically, the higher probability for unemployment of single households leads to higher household nonemployment rates at the aggregate level of society; however, decomposition analyses of polarisation trends have shown that the share of certain household types in society is not the main explanatory factor of changes in household nonemployment. In most countries, changing polarisation within household types has contributed more to changes in household nonemployment than have changes between household types.[5] Convergence in male and female labour market participation explains large shares of the trend in countries with increasing polarisation. This factor interacts with region, age and education. Educational homogamy, however, cannot be confirmed as a relevant reason behind risk clustering (Gregg, Scutella and Wadsworth 2010; Corluy and Vandenbrouke 2013).

[5] There are some exceptions to this pattern. In Germany, for example, changes in the household nonemployment rate between 1984 and 2004 can be better explained by changes of household shares than by within-household-type changes in polarisation (Gregg, Scutella and Wadsworth 2010, p. 154). In Belgium, between-household-type polarisation contributed more to changes in household nonemployment between 2000 and 2008 than did within-household-type polarisation (Corluy and Vandenbrouke 2013, p. 16).

As indicated above, childbirth can enhance the poverty risk of certain social groups, including the unemployed. The relation between having children and household nonemployment varies across countries and household types (Corluy and Vandenbrouke 2013, p. 24). For couples, having children increases the risk of dual nonemployment in some countries, especially for single-earner households (Härkönen 2011). The effect of children on household nonemployment can therefore be traced to a number of factors that influence women's employment rates. Personal preferences play an important role in women's career trajectories (Hakim 2006), as do the preferences of women's partners and cultural norms concerning gender roles. Women's education, the type and quality of jobs available to them, and policies of work-family reconciliation are additional factors that influence employment decisions (Esping-Andersen 2009, Kangas and Rostgaard 2007). The way social policies are designed thus has an important effect on the nexus between the labour market and the specific combination of individuals' characteristics within households and their care- and income needs. Policies to reconcile work and family life need to be seen in the context of other welfare state transfers and services. Benefits for the working-age population have undergone a series of reforms over the past decades in response to the discussed economic and demographic changes. Over the years, the policy debate has concentrated increasingly on employability and labour market integration (Clasen and Clegg 2011a, Konle-Seidl and Eichhorst 2008). The following section outlines these policy changes, and Section 2.5 discusses interactions between policies and household characteristics in greater detail.

2.4 Social risks in the welfare state

The large-scale socio-economic changes that have occurred since the 1970s have initiated a process of reforms within European welfare states that is still going on today. Western European welfare states initially reacted to structural unemployment by reducing their labour supply. For this purpose, the social benefit systems were opened up to a wider spectrum of the population. Because of the shortage of jobs, certain groups of unemployed persons were relieved from the need to search for new employment by extending eligibility for unemployment insurance towards the pension age and introducing special unemployment assistance schemes for persons who had exhausted their insurance claims. Many countries introduced early retirement schemes, which also offered an option for employers to reduce labour surpluses (Ebbinghaus 2006). A third method of reducing the labour supply was extending the scope of

sickness and disability benefits. The opening of exit routes out of the labour market was thus primarily directed towards groups with low employment prospects due to poor health or older age. Most of these routes offered paths to exit the labour market early by bridging the gap between job loss and pension receipt. Another group deemed eligible for passive benefits (in some countries) was mothers. In these countries, parental-leave schemes tended to offer employment breaks of several years, and in many cases, single parents were not considered unemployed while on benefits. France and Ireland even installed separate benefit schemes for this group (Clasen and Clegg 2006a; Ebbinghaus 2006, Morel 2007).

The different strategies of labour shedding were successful insofar as they kept certain groups out of the labour market by securing their financial situation via other means. In the long term, however, this approach proved unsustainable. The policies gradually increased fiscal pressure on welfare states through two mechanisms: First, the extension of public alternatives to market income created work disincentives within benefit systems, which led to an inflow of long-term benefit receipt by the newly emerging social risk groups (Clasen and Clegg 2011a). For women, state transfers were able to balance the consequence of decreasing male employment, increasingly common divorce and single motherhood and the lack of childcare options. Moreover, increased unemployment was not restricted to the first wave of workers hit by industrial decline. Globalised competition and shifts in labour demand towards highly skilled personnel led to a persistently heightened risk of unemployment among low-skilled workers. Given these workers' poor employment and wage prospects, unemployment insurance and assistance were more frequently prolonged. In some countries' institutional arrangements, unemployed persons with health problems could opt for disability benefits that were typically more generous, less likely to be means-tested and did not require them to be available to the labour market (Erlinghagen and Knuth 2010). Second, the increasing receipt of working-age benefits coincided with increases in pension claims. The maturation of public pension systems caused pension claims to become more generous. At the same time, employment rates began to drop. Thus, welfare systems became more cost-intensive while their financial base declined both in terms of insurance contributions and taxes (Ebbinghaus 2006).

By the end of the 1980s, employment rates in many European countries were only partly reflected by official unemployment statistics due to high shares of benefit

recipients in systems aimed towards the 'inactive'. The continuous trend of rising life expectancy and falling birth rates put additional pressure on welfare states, which led to a re-orientation in national welfare and labour market policies (Clasen and Clegg 2011b, Eichhorst et al. 2008). The promotion of labour market participation became a central purpose of reforms, and *activation* became one of the 'buzz words' of social policy debates in the 1990s and 2000s. Active Labour Market Policies (ALMP) were used more heavily than before and were promoted by OECD and EU recommendations (Armignon 2007). Parts of these policies were directed at the demand-side, e.g., hiring subsidies or loosening employment protection. At the centre of attention, however, were supply-side measures to 'activate the inactive' within social benefit systems. At the heart of activation lies a combination of enabling and demanding policy instruments to promote labour market re-integration. Enabling measures include, for example, training and counselling. The demanding aspect of activation policy refers to the benefit recipient's obligation to engage in job search or other work-related activities and to the possibility of sanctions (i.e., benefit cuts) in case of non-compliance (Marchal and Van Mechelen 2013). The United Kingdom, Denmark and the Netherlands were among the first countries to condition benefit rights on mandatory job search- and training activities (in 1989, 1990 and 1995, respectively) (Finn and Schulte 2008; Kvist, Pedersen and Köhler 2008; Vis, Kersbergen and Becker 2008). In the late 1990s, other countries followed, including Sweden, Germany, France and the Czech Republic. Initially, the target groups of activation programmes differed significantly across countries. Scandinavian countries first concentrated on young social assistance claimants and then moved towards unemployment insurance and other age groups within social assistance. The United Kingdom initially focussed on beneficiaries of contributory unemployment benefits, while Germany and France first had a stronger focus on recipients of unemployment assistance (Konle-Seidl and Eichhorst 2008). Over time, the scope of activation was widened in most countries, which also affected groups that were traditionally deemed unfit to work, such as single mothers and recipients of disability pensions (Weishaupt 2013). By the mid-2000s, 'work first' had become the guiding principle of labour market- and benefit reforms across Europe.

The rise in benefit conditionality was often accompanied by a restructuring of the social benefit systems (Clasen and Clegg 2011b). In order to increase labour supply, benefits that were expanded in the 1970s and 1980s were now cut in terms of generosity and

duration. The United Kingdom, for instance, abandoned earnings-related unemployment payments in the 1980s and restricted them further in 1997 when the contributory benefit was limited to six months and the right to long-term unemployment allowance became dependent on overall household income. In the Netherlands, unemployment assistance was abandoned and merged with general social assistance in 1995, and job-search requirements were tightened for most claimants. Similar reforms were carried out in Germany in 2005. In Poland, the unemployment benefit system installed in the initial phase of economic transition was continuously cut back between the mid-1990s and the mid-2000s. Other types of social transfers in Europe were also restricted or abandoned altogether. Early retirement schemes, for instance, were heavily retrenched in many countries but are still in place in others, such as in France, Spain, Germanyand Hungary (Ebbinghaus and Hofäcker 2013). Eligibility conditions for disability benefits became tighter in the Netherlands, Denmark, Spain, Hungary and the United Kingdom, among other countries (Clasen and Clegg 2011b).

Many reform projects thus included a redefinition of who was able and supposed to work in principle. This redefinition also included mothers. Categorical benefits for single mothers were discontinued, and mothers were less frequently exempt from activation requirements. If they were exempt, the exceptions were restricted to mothers of small children below school- or kindergarten age. Strategies to lower the employment barriers for women and carers became increasingly prominent in policy agendas across Europe. Childcare services, part-time arrangements and leave schemes are now the main instruments employed to increase female employment rates. The Scandinavian countries advanced in this field particularly early. Beginning in the 1970s, public social services offered child- and long-term care to employed families, thereby facilitating women's employment while simultaneously offering employment possibilities. France and Belgium also developed day-care services in the 1970s that complemented the already-existing *ecoles maternelles*, but in the 1980s, a policy of 'free choice' was adopted by offering cash benefits for stay-at-home mothers alongside public childcare (Morel 2007). The Netherlands represents an interesting case in its reliance on flexible part-time arrangements for safeguarding the combination of parenting and work. As a result, the one-and-a-half earner household is more common in the Netherlands than elsewhere in Europe. Parental-leave schemes have also been subject to reforms over the past decade. In Germany and Luxembourg, overly long leave periods have been shortened in

order to prevent women's labour market detachment. Both countries also included fathers in the new leave arrangements, a policy first adopted in the 1990s in the Nordic welfare states (Daly 2011). In some states, however, there are no leave schemes available to parents except for maternity leave directly after child birth. These countries, which include Greece, Italy and Spain, are often also less likely to provide or subsidise formal childcare. In the case of elderly care, the availability and public funding of formal care services is still very limited in many countries. To families in Central and Eastern Europe, long-term care services are rarely available (Styczyńska 2012, Bettino and Verashchagina 2010) and also in Western and Southern Europe, care services can be scarce and expensive (Leitner 2003). Care by family members is often prioritised by governments, though it remains insufficiently funded. Ironically, many households turn to migrant care workers from Eastern Europe in order to fill these gaps in social protection (Simonazzi 2009).

Many welfare regimes thus remain insufficient when it comes to securing individuals' ability to work despite care responsibilities. Moreover, families with low wages and single parents often find it difficult to provide an adequate level of income for their households (Bahle, Ebbinghaus and Goebel 2015). Adaption to social change has been partial and incomplete, particularly in the continental and Southern European welfare systems. This has led to a dualisation of the population into groups that are relatively well-protected by the traditional, status-maintaining social insurance schemes and a group of 'outsiders' who face insufficient incomes and social security coverage due to instable working careers and low wages (Palier 2010). But also the Scandinavian welfare states and those of the United Kingdom and Ireland do not perform well for every social risk group. While nonemployment among couples and single parents in Denmark is extremely low, those that experience this situation face a higher risk of poverty than do those in the United Kingdom, a country with a comparatively high percentage of nonemployment among both household types (Bahle, Ebbinghaus and Göbel 2015). Depending on the overall architecture of a welfare regime, therefore, some categories of social risks are confronted quite successfully, while others may be neglected. Within households, this creates the institutional context of decisions on income and employment. The following section deals with the influence of welfare state policies on households' economic activity.

2.5 Welfare policies' interactions and household employment

The previous section revealed that apart from adapting benefit systems, countries began to introduce or extend additional policies to deal with new social risks in post-industrial society. The modernisation of welfare regimes centred around the promotion of households' self-sufficiency via labour market integration, which is most obvious in the field of activation and policies of work-family reconciliation. These reforms altered the benefits available to various population groups, thereby influencing the status composition of the nonemployed population (DeDeken and Clasen 2011). Status combinations within households are therefore also likely to have changed. This section discusses the interaction of benefit rights within households. Three types of interactions are of special interest here: those between different risk factors and benefit generosity, those between different kinds of benefits, and those between labour market statuses within households. These three areas are interconnected as both risks and benefits are combined within households. As a result, households' employment outcomes depend on a combination of factors that together determine their earnings possibilities, benefit rights, and access to services. These factors are found in households' composition regarding the number of adults and children, health and skills, and the work and insurance records of adults.

Corluy and Vandenbrouke (2013, p.24) have shown that the probability of household nonemployment is greater for individuals with disabilities, low-educated persons and those who are either very young or close to retirement age. Previous research has found that these risks interact with the regulation of social benefits. Benefit generosity, for instance, has varying effects depending on the type of benefit system and the social group concerned. Biegert (2011) has found, for instance, that the probability of women's nonemployment is more strongly affected by replacement rates in unemployment insurance than that of men. Disability pensions, in contrast, have a greater impact on men's probability of nonemployment. The generosity of social assistance benefits even has opposite effects for both genders: While higher benefit levels are associated with higher levels of nonemployment among men, they seem to reduce nonemployment among women. An exception is the group of women with tertiary education, whose probability of being nonemployed rises with higher levels of social assistance. Overall, however, educational differences in the effects of institutions

are more pronounced among men, particularly among those with medium levels of education.

Studies on reforms of such benefits have revealed that restricting the access and generosity of transfers can bring more individuals into work if combined with effective activation measures (Konle-Seidl and Eichhorst 2008). However, transitions into other, alternative benefit systems are also observed as a (mostly unintended) consequence of reforms. Garcia Mandico et al. (2016) have studied transitions after a large-scale re-assessment of disability insurance claims in the Netherlands between 2004 and 2009 and have found that only half of those leaving disability insurance moved into employment. The other half either moved into unemployment benefits or other states of nonemployment. Studying such spill-over effects in Austria, Staubli and Zweimüller (2013) have shown that there was only a moderate increase in employment after raising the early retirement age, and this increase was mainly among healthy, highly educated workers with high earnings. Older workers with low wages and poor health instead moved into unemployment or disability benefits. Inderbitzin, Staubli and Zweimüller (2013) have found similar substitution effects between benefits and have additionally observed benefit complementarity, i.e., the combination of unemployment and disability benefits or a sequential take-up before entering retirement. Larsson (2006) has reported complementarity effects between unemployment and disability insurance in Sweden, and an interaction of former wages with replacement rate ceilings in different benefits.

Substitution and complementarity can also occur in the area of activation policy. Certain groups may be included or excluded from job-search and work requirements: Age limits, degrees of disability, and being a lone parent are criteria that determine on who is targeted by or exempt from activation. Such exemptions may enable some households to receive benefits while none of the members are required to seek employment. Even in the absence of generous exemptions, activation may not effectively reduce the number of nonemployed households if access to alternative benefits is granted relatively easily. As mentioned above, policy changes over recent decades have redefined countries' norms about who, in principle, should work to earn their living and who, in contrast, should instead be allowed to rely on public support. Increasing employment among the working-age population has played a central role in many countries' benefit reforms. However, as Konle-Seidl and Eichhorst (2008, p. 432) put it, "activation programmes effectively help screen the benefit recipients and differentiate between beneficiaries

available for work and those not available ('shaking the tree'), but obviously they are insufficient tools for the labour market integration of weaker groups."

For these weaker groups, having dependent children can be a cause of household nonemployment, but the extent of this risk depends on the country and social group concerned (Corluy and Vandenbrouke 2013; Härkönen 2011). Having children increases the need for income in households, thereby creating incentives to intensify the labour supply. Even so, the amount of time that can be spent in paid employment may be heavily restrained if no childcare – formal or informal – is available. In countries that have implemented generous leave schemes and childcare arrangements, mothers' employment rates are generally higher (Esping-Andersen 2009, Nieuwenhuis 2014). If childcare is expensive, specialisation within couples becomes more attractive. Low-wage earners (particularly single parents) are likely to be dependent on social benefits if their salaries cannot cover both the needs of their families and child-care costs. Activation policies that take these family issues into account usually focus on the role of mothers in child-rearing and paid work rather than on parenthood in general. Some countries acknowledge mothers' childcare needs and time constraints by exempting them from job-search requirements while on benefits. Such exemptions are typically tied to the age of the children and expire once they have reached a certain age threshold (Haux 2013). This strategy potentially avoids poverty, e.g., by preventing low-wage parents from having to carry the financial burden of childcare. In the long-term, however, lock-in effects in benefit receipt may occur due to labour market detachment and the loss of human capital.

These effects are particularly harmful considering the finding that women's skills are crucial to overcoming the so-called "macho-effect" within couples, i.e., of households' reluctance to have a female breadwinner, even in the event of the husband's job loss (Härkönen 2007, p. 53). The institutional context of the welfare state plays into such within-couple dynamics. In countries with generous leave schemes, women's probability of working full-time is higher than their probability of working part-time or not at all. The availability of child-care services increases the probability of mothers' employment in general (Kangas and Rostgaard 2007). Passive child benefits, in contrast, diminish female employment (Nieuwenhuis 2014). Studies suggest that women are less likely to compensate for their partners' job loss by finding employment or increasing their work hours if there are structural barriers to doing so, e.g., a lack of

full-time childcare offers. Women's compensation for male job loss is also less likely if unemployment benefits are either too generous (Ehlert 2012) or means-tested at the household level (McGinnity 2002).

The latter is related to a more general problem of work disincentives within targeted benefits. In systems that apply strict means testing, most (if not all) household incomes are taken into account when determining the benefit amount to which a claimant is entitled. Every additional hour worked by household members thus diminishes the benefit. Unless the income gain from employment surpasses the simultaneous loss of benefits, partners and other household members of unemployed persons are unlikely to increase their labour supply. In some benefits (e.g., the German *Arbeitslosengeld II* and the French *Revenu de Solidarité Active*), a proportion of earnings is disregarded from the means test in order to ease transitions from benefits to employment (Bahle, Hubl and Pfeifer 2011). This strategy, however, can encourage the take-up of marginal employment in order to top up the benefit. The possibility of combining benefits and work also creates work disincentives in lower wage spectrums (Eichhorst 2012, Oorschot 2002).

In theory, disincentives could be stronger for households that have higher financial needs, for example, in the case of dependent children. Benefit rates tend to be higher for families and reaching an adequate wage may be more difficult. Härkönen's (2011, 2007) results on the effect of children on dual joblessness both support and challenge this claim. He found nonemployment spells of couples to be longer if they received means-tested benefits. In five out of nine countries, having children increased the risk of entering dual nonemployment. However, although this effect was particularly strong in the United Kingdom and Ireland, it was not caused by these countries' focus on means-tested benefits. Weak employment protection and a low extent of policies supporting mothers' employment seemed to be more relevant factors. The finding that the child-induced employment risk was more persistent in these countries over time nevertheless seemed related to means-testing.

While incentive structures created by social policies have a significant impact on household employment, their ultimate effects depend on the specific labour market context. High aggregate unemployment can lead to discouragement within households and prevent partners of jobless persons from acting as 'added workers'. A large low-

wage sector may reinforce disincentive effects within benefits, which may be further intensified if childcare is expensive or if many jobs are fixed-term and do not offer access to higher-tier social security. If men have better access to higher wages and work hours, specialisation within households according to traditional gender norms becomes more likely, even if social policy supports maternal employment. Household employment patterns are thus a result of structural and cultural factors (Steiber and Haas 2010). They depend on the economic opportunities and incentives offered by the welfare state and labour market while simultaneously being shaped by the norms of gender roles and family life.

2.6 Inequality between households

The discussion thus far has addressed interactions between welfare policies, labour market opportunities and household composition regarding household employment. A special emphasis has been placed on the relation between these institutional areas and social risks, i.e., situations of social disadvantage and welfare loss. While households are important places of risk compensation, the accumulation of several risk factors is frequently observed in socially vulnerable households. The extent to which risks cluster within households has an effect on the distribution of work between them and therefore also on the distribution of work incomes.

Unfavourable combinations of household structures, labour market demand and state policies towards both of these spheres can increase levels of social vulnerability and poverty. Barbieri and Bozzon (2016), for example, have demonstrated that poverty as a consequence of child birth is a greater problem for households in Southern European welfare states than in other parts of Europe. The authors ascribe this finding to a combination of familist policies and a strong dualisation of labour markets and social protection. In the Mediterranean countries of Europe, public support for families is low in terms of both benefits and services; therefore, child- and elderly care are provided informally or bought on the market. At the same time, labour markets offer relatively secure conditions for well-established workers, while younger workers and immigrants face unstable work conditions, low pay and lower social rights. Although flexibilisation is a general trend in post-industrial labour markets, the consequences for families are most severe in ‘familistic’ regimes that offer little to no support for labour market ‘outsiders’. Those whose jobs do not grant access to social insurance often have very

limited access to alternative incomes. Citizens of Greece and Italy, for example, have no general right to social assistance. In Spain, such a right exists, but benefits are low and vary by region. Moreover, they are typically not accessible for persons younger than 25, and decisions on claims are often made on a discretional basis (Bahle, Hubl and Pfeifer 2011).

The welfare state therefore has an important influence on the structure of social vulnerability (Ranci 2010, p. 22) as well as on households' strategies to overcome it. Regarding households' potential to alleviate poverty risks and – more generally – maximise income, certain household structures and within-household employment patterns may be more beneficial in some countries than in others. Means-testing of unemployment benefits (e.g., in the United Kingdom and Germany) could encourage the formation of single households among jobless persons who would not be eligible for the benefit if they lived with their parents or partners (Eichhorst, Grienberger-Zingerle and Konle-Seidl 2008). A welfare system that offers generous pensions but less support and security for younger generations offers incentives to form multi-generational households. In Greece, Spain and Poland, for example, old-age benefits play an important role as a form of protection against child poverty (Bradshaw and Huby 2014). The tax system can also have an influence on household formation. In Germany, Poland and Luxembourg, for example, spousal tax-splitting favours single-earner and one-and-a-half earner couples over double-earner households and single parents. The latter two scenarios lead to a greater number of households with a reduced ratio between income earners and dependent family members. These households are more likely to be socially vulnerable in terms of housing conditions and per-capita income. Due to a strong division of labour in these households, they are also less able to compensate for their main earner's job loss by increasing the labour supply of other members. Nevertheless, the effects of risk clustering are not restricted to multi-adult households but also apply to single adults. Because single households cannot rely on another person to balance earnings limitations, they are at a higher risk of poverty and deprivation (Callens and Croux 2009; Ehlert 2012, Halleröd and Bask 2008).

However, even if other household members are present and increase their work intensity in economically challenging situations, it is not clear whether the earnings of an added worker can effectively counterbalance the main earner's income loss. Fackler and Hank (2016) have studied the effects of unemployment on the income trajectories of German

households and found job displacement to lead to long-term losses in earnings and overall household income. While they have been able to show that welfare state transfers have compensated for this loss to a significant degree, they have not been able to find an added-worker effect on household income. An earlier study comparing couples in the United States and Germany, in contrast, found some proof of added worker effects (Ehlert 2012). Women were more likely to act as added workers in the US than in Germany, where unemployment benefits operated as an important financial cushion. This cushion, however, has become weaker over time, and households in Germany are less likely to recover financially from unemployment today compared with the 1980s. This finding concerns male income trajectories in Germany as well as those of women in both Germany and the US. Overall, male earnings have buffered female unemployment to a greater extent than female earnings have compensated for male unemployment.

Women therefore still rely more on the family as mechanism of redistribution than do men, which may explain why female poverty is more often a result of employment changes and demographic events, e.g., child birth or separation. For men, demographic events play a minor role compared with unemployment (Callens and Croux 2009). The rate of both labour market- and demographic events is higher today than it was at the beginning of the 1970s. Family and employment situations have become more unstable, exposing more households to financial risk. Families headed by low-educated, low-wage earners and the growing number of single households (particularly single mothers) are especially vulnerable. Rising female employment rates have counterbalanced these risks to different degrees depending on countries' overall adaptation to these socio-economic changes.

The effect of increasing employment among women has been debated in studies on income inequality. According to Esping-Andersen (2007), the steepest increase in women's labour market activity has been among higher-educated women (mostly living with higher-educated men), which has led to a widening gap between economically strong and weak households. Although Corluy and Vandenbrouke (2013) have confirmed that changes in male and female employment rates are important reasons for increasing polarisation of employment among households, they have not found such a link between polarisation and educational homogamy. Kollmeyer's (2013) study of thirteen European countries, Australia, the United States, and Canada has found that

higher female employment generally reduced inequalities between 1967 and 2005. At the same time, growing educational homogamy and single motherhood have had disequalizing effects. Harkness' (2010) results for a similar sample of countries in the mid-2000s specify that cross-national variance in inequality is less related to the population shares of couples and single households. Inequality within household types better explains variation, i.e., gaps between single working women and between dual- and single-earner couples. Nieuwenhuis' (2014) confirmed previous findings that partners' earnings became increasingly correlated between 1975 and 2005. This development could have increased inequality between couples but was counterbalanced by generally decreasing disparities among women's earnings and increasing shares of women's' earnings in overall household income. As a result, female earnings had an attenuating effect on between-couple inequality.

Thus, although changes in family structures have lowered households' redistributive capacities (Albertini 2008, Peichl, Pestel and Schneider 2012), this is not the main source of rising income inequality. Moreover, the impact of family composition on the income distribution varies considerably across countries. Households' work intensity seems to be a stronger predictor along with national wage structures and tax-benefit systems (Biewen and Juhasz 2012; Medgyesi 2014). Kollmeyer's (2013) study also points to the importance of other demographic and institutional factors. A large population share of persons older than 65 increases inequality, while union density, centralised wage bargaining and welfare state generosity lower it. Nieuwenhuis (2014) has found that women's earnings reduce between-couple inequality more in countries that focus their family policy on promoting mothers' employment, than in countries that emphasise passive financial support for families. In the latter, women are likely to be employed to a lesser degree and to contribute less to household earnings, thus accentuating male earnings inequalities.

The conclusion that can be drawn from the theoretical discussion is that household nonemployment is an important indicator for risk accumulation within households. Social risks result from situations of incompatibility between individuals' resources and needs with the demands of the labour market, and from the degree to which societal institutions compensate for this mismatch. These institutions are mainly found in the area of the welfare state and the household and family. As we have seen, these areas do not exist independent of each other. Welfare policies' level of support for persons in

need tends to depend on the household context of those seeking support. This can influence patterns of household formation, which, in turn, influence patterns of employment and income redistribution within and across households.

3. Three research papers on household employment and income risks

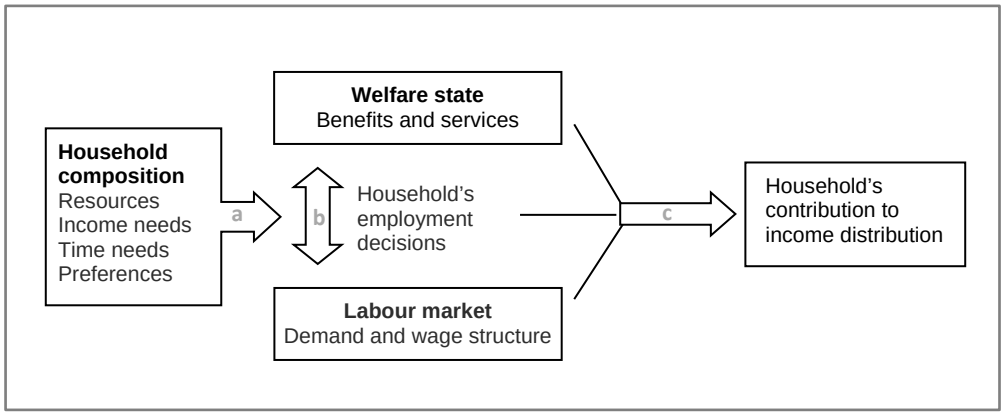
3.1 Research strategy

The theoretical discussion in Section 2 leads to the conclusion that household employment decisions are interrelated with opportunities and incomes offered by the labour market and welfare state. The supply of labour by households is dependent on the extent to which members' characteristics meet the demand in terms of skills, health and age. Work preferences may be rooted in social norms but are determined to a large extent by households' income needs and restrictions concerning the feasibility of work, both of which are dependent on household structure. Larger households need more income than smaller ones, while dependent children and frail relatives require care. If not available otherwise, this care has to be provided by household members, which reduces the amount of time that can be devoted to paid employment. The consequences can be dire, especially in households with a single employable person or with members who have low wage prospects, e.g., due to low education. The extent to which different factors of social risk within households produce and prolong nonemployment is a central topic of this dissertation. The state represents the third player in the game of household nonemployment. Welfare policies can help individuals find and maintain employment in difficult times, or they can offer financial support if households are partially or fully without employment. Welfare regimes differ regarding the extent to which different social risks are compensated for and the manner by which they are addressed.

This ensemble of institutional influences on household income is what Esping-Andersen (1999) termed the "triad of welfare producers", also known as the "welfare triangle" (Evers 1990). Configurations within and between the family, the labour market and the welfare state are crucial for the production and redistribution of income and thereby shape patterns of socioeconomic risk structures in society. Therefore, their interplay is an important determinant of income inequality. Figure 1 offers a summary of these relationships and places household employment decisions at the interface of family

constellations, provisions by the welfare state and opportunities offered by the labour market.

Figure 1: Household employment and income



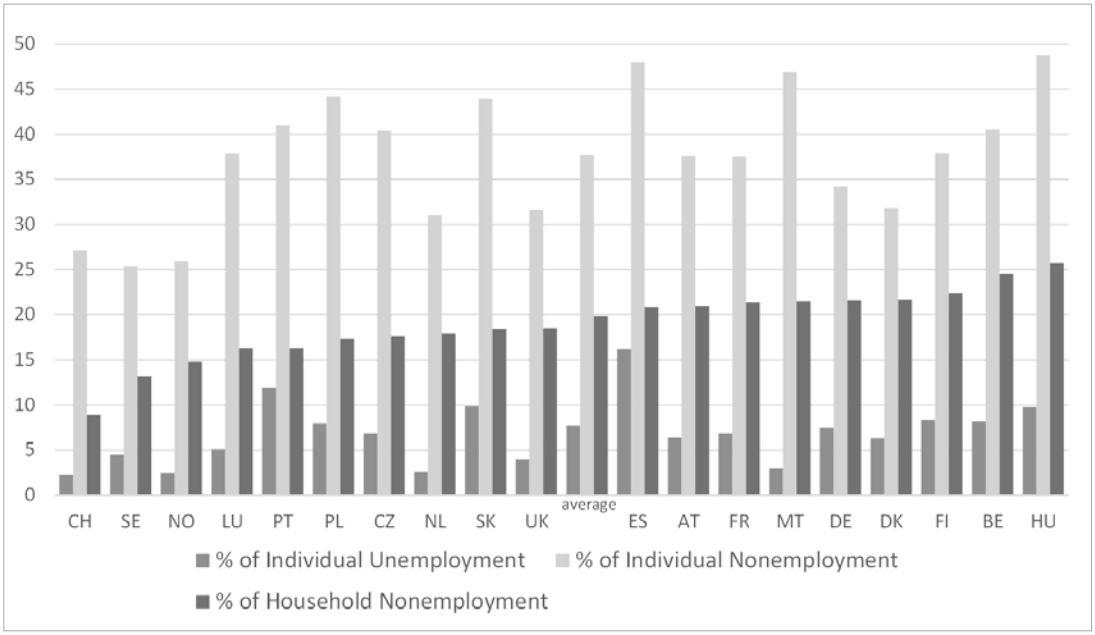
Source: Own depiction

The three papers of the dissertation focus on different aspects of the depicted interrelationships. In order to provide answers to the project's main research questions (see introduction), different sets of data sources and quantitative methods are used. **Paper 1** analyses the influence of social benefit regulation on the connection between households' employment risks and employment outcomes. The focus of the paper is therefore on the links between welfare producers that are represented by **Arrows a and b in Figure 1**. Among the dissertation papers, the first study is the most extensive in terms of country sample and variety of data sources. The study uses multilevel regression models to assess cross-level interactions between policies and households. Such an analysis requires a larger number of country cases in order to yield reliable results. The household-level data of the study stem from the European Union Statistics on Income and Living Conditions (EU-SILC). Although EU-SILC contains information on a total of 32 European countries, only 20 are analysed in Paper 1 because of restrictions concerning the availability of institutional data. Therefore, the models are computed using Bayesian Markov-Chain-Monte-Carlo estimation. This procedure has favorable properties over Maximum Likelihood estimation when the number of countries is under 25 (Stegmueller 2012). Estimated coefficients are less likely to be biased and are generally more conservative.

The institutional information from which the macro-indicators of the models were constructed was retrieved from national legislation and from academic comparative databases. The main sources were the EuMin dataset (provided by the Mannheim

Centre for European Social Research (MZES)), the CSB-MIPI dataset (provided by the Herman Deleeck Centre for Social Policy at the University of Antwerp) and the DICE database (provided by CesIfo in Munich) (Hubl and Bahle 2012; van Mechelen et al. 2011; DICE database 2011). The institutinal aspects studied in this paper concern policies that are designed to increase the labour market supply of the population. Demanding activation measures within unemployment insurance and social assistance are studied along with the extent to which access to other, functionally equivalent benefits is restricted. The study therefore relates to the literature on substitution and complementarity effects presented in Section 2.5 (e.g., Inderbitzin, Staubli and Zweimüller 2013). The benefits under study are disability pensions, early retirement programmes and minimum income protection other than general social assistance. The regulation of these benefits constitutes individuals' possibilities to acquire income alternatives to labour earnings and also determines the context in which benefit recipients define their situation in the labour market. As the literature discussed in Section 2.2 suggests, nonemployed individuals are more likely to consider themselves unemployed in countries with large unemployment benefit schemes and restricted disability benefits, and they are more likely to define themselves as inactive in countries with easily accessible disability- and early-retirement schemes (Erlinghagen and Knuth 2010). As a consequence, countries differ more in terms of unemployment than in terms of total nonemployment..

Figure 2: Individual and household nonemployment in 20 European countries



Source: EU-SILC 2011.

Figure 2 illustrates variations of unemployment and nonemployment with the data used in Paper 1. Household nonemployment varies less than the individual-level indicators, reflecting the compensation of labour market risks within households. Nevertheless, the graph also suggests cross-national variation in this capacity

Paper 1 considers benefits for the working-age population, and the micro data are accordingly restricted to households that have members under the pension age. In addition, households that have no members above 25 are also excluded from the analysis. Among these very young households, students and labour market entrants are overrepresented. These groups are subject to specific employment and income dynamics that go beyond the scope of this dissertation. Although initial labour market entry and retirement later in life are highly relevant from a sociological point of view, the focus of this project is on dynamics at the core of the working-age population. Therefore, all three studies of the dissertation consider households with at least one member over the age of 25 and one member under 65.

Paper 2 also studies connections **a and b in Figure 1**, but from a longitudinal perspective. Given the connection between household worklessness, social vulnerability and poverty, the interest lies in the persistency of this situation and in its remedies. Therefore, while the first paper analyses the general probability of household nonemployment, the second paper narrows down the focus to households that are affected by it. The main question is how negative employment outcomes are overcome by households in two different institutional settings, i.e., the United Kingdom and Germany. These two countries were selected because Germany's policy trajectory in the 2000s was frequently described as moving towards the British model of welfare. Unemployment benefit reforms were marked by a strengthening of needs-based benefits, cutbacks of insurance-based rights and an expansion of activation policies (Eichhorst, Grienberger-Zingerle and Konle-Seidl 2008). The second paper analyses transitions out of household nonemployment througout the early 1990s until 2009 using data from the British Household and Populaiton Survey and the German Socio-Economic Panel [6]. Employing discrete-time event history regression models, the influence of indivudal resources in multi-adult households is analysed together with other aspects of household structure. For this purpose, the paper concentrates on

[6] For more information, see http://www.diw.de/en/diw_02.c.221178.en/about_soep.html and https://www.iser.essex.ac.uk/bhps.

couples. Male and female education, health and prior work experience represent labour market resources. Household composition is measured by the number of children, members in need of long-term care and the correlation of partners' resources in terms of education and age. Changes in institutinal contexts are taken into account by specifying the time period during which a nonemployment spell began, i.e., before or after important reforms in unemployment and in-work benefits. Changes in labour market opportunities are controlled for by accounting for regional unemployment rates.

Paper 3 shifts the focus to the the societal level without losing sight of the previously studied individual- and household-level aspects. In the first two studies, macro-level phenomena are treated mainly as input factors for household employment outcomes. The third study examines the combined effect of households' family structures, employment outcomes and benefit rights on countries' income distributions. This link between the welfare triangle and income inequality is depicted by **Arrow c in Figure 1**. The third paper again turns to the EU-SILC as data source and makes use of its comprehensive information on individuals' labour market status, household composition and income sources. Four countries are studied in depth concerning the influence of these factors on income rankings among households. These countries – Germany, Poland, Spain and the United Kingdom – were selected because of their varying institutional settings and different economic trajectories during the great recession that began in 2008. While Germany was able to prevent declines in GDP from affecting employment, Poland experienced increases in unemployment during the recession despite being the only country with positive growth rates. The UK was initialy hit hard by the crisis but recovered faster than many had expected. Spain, in contrast, is still struggling with the consequences of the economic shock (Eurostat 2016, OECD 2012, OECD 2014, OECD 2016). As discussed in Sections 2.3 and 2.5, lower household employment often coincides with other social risk factors, and policies to alleviate these risks have an important impact on poverty and income inequality. In order to explore this connection further, Paper 3 analyses the influence of these risk factors in different parts of the income distribution. For this purpose, the Apha-Beta-Gamma method of measuring local inequality is combined with a counterfacutal re-weighting procedure (Chauvel 2016, Biewen 2001). This strategy relates distributinal changes in household work intensity, size and benefit receipt to changes in income inequality.

3.2 Results

Table 1 provides an overview of the studies' results regarding individual-, household-level- and policy influences on household nonemployment and inequality. Paper 1 confirms the findings of previous research for individual labour market resources and risks. Higher education and better health function as important protectors against household nonemployment, while age is a risk factor. A higher number of adults in the household reduces the probability of household nonemployment, whereas children and members in need of long-term care increase this probability. The effect of children is stronger for younger and single parents. Despite these important insights into household employment risks, the main interest of Paper 1 is on how these risks are influenced by social policies that were designed to address them. The research question behind the first paper is therefore:

How is the context of social protection related to international variation in household nonemployment?

The study shows that social benefit regulation alters households' probability of nonemployment by interacting with social risk factors within them. The study focuses on different strategies to make social benefit systems more conditional in terms of access requirements and behavioural obligations. Activating social benefits can have favourable effects on aggregate employment and reduce social inequalities in labour market access. This is the case in countries with intensive activation in unemployment insurance, limited access to early retirement and a low number of separate, non-contributory minimum income benefits. Directing labour market integration policies towards mothers on social assistance helps to reduce differences between single mothers and couples with children as well as between single mothers and other single households. The inequality-reducing effect of female employment can thus be promoted by activation.

However, there are greater inequalities in households' employment outcomes in countries that generally apply strict activation rules in social assistance. This raises questions as to how these policies are carried out towards particularly vulnerable population groups with low employability. In these financially tight tax-based benefit systems, it is possible that incentives at the policy-implementation level lead case managers to concentrate their efforts on clients who are easier to place (Van Berkel, De

Graaf and Sirovátka 2012). Recipients with a greater distance from the labour market may not profit from work-first policies, and more supportive (and expensive) measures, such as training or coaching, may not be available.

Table 1: Research findings

Studied resources, risks, and context factors of household nonemployment		Findings		
		Study 1: Benefit activation and nonemployment risks	Study 2: Duration of couples' nonemployment	Study 3: welfare triangle and inequality between households
Individual	Human capital	Higher-educated households have a lower probability of household nonemployment.	The duration of dual joblessness varies more across households based on women's education and work experience than on men's.	*Control variable*
	Age	Older households are at a higher risk of household nonemployment.	A higher age of both partners reduces the likelihood of ending dual joblessness.	*Control variable*
	Health	Household members with health-related limitations in daily activities increase the risk of household nonemployment.	In the UK, couples with healthier women have a comparative advantage over other households concerning an exit from nonemployment. In Germany, the health of both partners is significant.	*Control variable*
Household	Marital homogamy	*not included*	Homogamy in terms of age and education shows no effects on the duration of couples' nonemployment.	*not included*
	Long-term care	*not included*	Long-term care needs prolong couples' nonemployment.	*not included*
	Children	Children increase the probability of household nonemployment, particularly for younger households and singles.	Couples with children have shorter nonemployment spells. This is more pronounced for parents of young children in Germany.	The decreasing number of households with children in Germany, Poland and Spain and the increasing number of children in the UK had equalizing effects on the income distribution.
	Number of adults	Couples and multi-adult households have a lower risk of household nonemployment.	*not included*	Drops in household size in Germany and Spain and increases in Poland and the UK attenuated inequality.

Continuation of Table 1:

Welfare state	Unemployment benefits	Countries with strong activation within unemployment insurance have lower household probabilities of nonemployment and lower social inequality in nonemployment risks.	Couples' nonemployment durations increased over time, but multivariate analyses suggest that reforms were not the main reason for longer spells.	Changes in the distribution of unemployment benefits across households had equalizing effects in Spain and Poland but disequalizing effects in Germany and the UK.
	Minimum income protection	Countries with strong activation within social assistance show higher social inequalities in household nonemployment. Restricting the number of other minimum income benefits reduces household nonemployment.	See results for unemployment benefits.	*not included*
	Disability benefits	In countries with highly selective disability pensions, households have a higher probability of nonemployment, particularly among lower-educated and older households.	*not included*	Changes in the distribution of disability benefits across households had equalizing effects in in Germany, Poland, and Spain but disequalizing effects in the UK.
	Early retirement	In countries with limited early retirement options, educational and age differences in household nonemployment are lower.	*not included*	*not included*
	Activating mothers	In countries that make few exceptions for mothers, single parents have a higher probability of employment.	*not included*	*not included*
Labour market	Regional unemployment rates	*not included*	No significant effect is found, but an omission changes the estimation results.	*Control variable*
	Distribution of employment	*not included*	*not included*	Increases in household work intensity soothed income inequality in the UK, Germany, and Poland. Its decrease intensified inequality in Spain.

Difficulties in evaluating the specific needs of certain risk groups also come to mind when assessing the results for disability pensions. Restrictive access is associated with higher probabilities of nonemployment for all households, particularly for lower-educated and older households. As the probability plots of household nonemployment for different social risk groups in Paper 1 reveal, effects of disability pensions and early

retirement schemes form almost perfect mirror images. Substitution effects between early retirement and disability pensions for older and lower-educated households are therefore highly possible and need to be considered by policy makers who wish to activate the 'hidden labour market reserve'.

The second paper investigates several aspects of household composition and context regarding their influence on the duration of couples' nonemployment spells. The study aims to provide answers to the following research question:

What factors influence the duration of household nonemployment in different institutional contexts?

Paper 2 adds to the household-level findings of the first paper by specifying that the effects of male and female resources on the duration of couples' nonemployment differ across countries. Women's education and health matter more than men's in the UK when comparing households' prospects of re-entering the labour market. In Germany, male and female resources contribute to differences in spell durations more evenly. Having a household member in need of long-term care increases the time it takes to overcome nonemployment. Although Paper 1 finds that having children increases the risk of entering household nonemployment, couples with children exit nonemployment faster than couples without children. The second paper also assesses the influence of marital homogamy in terms of age and education. Neither the descriptive nor the multivariate analyses can find that partners' similarity alters their chances of re-employment compared with more heterogeneous couples.

The final aspect of interest in Paper 2 is the context of social policy, which underwent significant changes during the observed period. Means-tests and activation for the unemployed were expanded in the United Kingdom in 1996 and in Germany in 2005. Such policies bear the risk of increasing households' work incentives. The United Kingdom expanded tax benefits for low-wage workers in order to counterbalance this affect. The results concerning these changes are mixed. The descriptive analysis suggests that nonemployment spells became longer once these policies were introduced. The combined view on the descriptive results and event history models leads to the conclusion that the reforms have not had a direct impact on the duration of household nonemployment. The lengthening of spells is most likely due to changes in the

structural composition of the population that entered household nonemployment. Whether this is due to policy reforms or other factors requires further investigation. Nevertheless, reforms may have had an indirect effect on household nonemployment. In both countries, households that entered nonemployment by the mid-2000s had lower chances of exiting towards employment than did those who entered in the mid-1990s.

This is an illustrative example of the interplay between distributional changes in population characteristics, their clustering within households and effects on labour market status. This interplay is one aspect of the increasing polarisation of employment across households, a trend that Paper 2 confirms for couples in Germany and the United Kingdom (although this trend appears to have slowed down in the UK after 2005). Moreover, such developments have the potential to alter the distribution of work and benefit income and therefore also inequality between households. Paper 2 only focuses on couples, but changes are also likely to have occurred in other household types. As Paper 1 shows, the employment risks of these other household types differ from those of couples.

Building on the insights of the first and second papers, Paper 3 attempts to model the joint impact of changing distributions of work and welfare among different household constellations. The central interest lies with such changes' relation to developments in aggregate inequality between households. Thus, the paper aims to answer the following research question:

How does the distribution of employment across households influence income inequality in a given context of family structures and social protection?

Paper 1 finds that having children increases the risk of household nonemployment, particularly for single mothers. The situation of these mothers is worse in institutional contexts that emphasise women's traditional caring role within the family. Therefore, having children might be heavily related to welfare risks in some countries, which may explain the third paper's finding that the decreasing number of children per household in Germany, Poland and Spain slowed growth in inequality between 2005 and 2010. In Germany and Spain, reductions in household size also mitigated inequality. In the United Kingdom and Poland, by contrast, inequality was reduced not by shrinkage but by growth in household size. The number of potential earners can thus have different

effects depending on the overall welfare context. Changes in households' work intensity are easier to interpret: Higher work intensity has an equalising effect and can slow otherwise-increasing income inequality. This finding is in line with the studies of Kollmeyer (2013) and Nieuwenhuis (2014), who have found that women's increasing contributions to household income had an overall equalizing effect.

Turning to the influence of the welfare state, changes in the distribution of unemployment benefits made households remarkably more unequal in Germany. To some degree, changes in unemployment benefits also had disequalizing effects in the United Kingdom; and in Poland for the lowest income groups. In crisis-shaken Spain, however, unemployment protection balanced some of the worst increases of inequality in the lower income groups. Disability benefits educed inequalities in all countries with the exception of the United Kingdom. While the effects of benefit changes are most likely a result of policy reforms in Germany and the United Kingdom, they may be more related to economic developments in Spain and Poland. In the latter case, labour migration could also play a significant role.

Paper 3 demonstrates that the welfare mix of a country can have a significant impact on households' income rankings but that it cannot explain all changes in economic inequality. The chosen method has its limitations, for example, by not allowing for interactions between different variables of interest. It is also not certain that the changes in household composition led to changes in inequality, as a reversed causal argument is equally as plausible. The same can be said for the findings of the first paper. The observed effects merely indicate that given policies are associated with certain configurations of labour market risks. It is, of course, possible that labour markets influence risks, which, in turn, trigger certain policy responses. This thesis could serve as the starting point for a follow-up project.

4. Conclusion and outlook

Since the very beginning of research on labour markets, unemployment and poverty, the household has been recognised as an important economic actor, a mechanism of income redistribution, and a social stabiliser (Albertini 2008). However, much of the research on labour market dynamics focuses on individuals. Households are considered by scholars, for example, by adding an indicator of family type to a regression model to account for individuals' living conditions or by equivalising income variables according

to household size. The claim of this dissertation is that individuals' household contexts are highly complex and therefore deserve a closer, more direct inspection. Households are the merging point of different societal forces that together structure the distribution of socioeconomic opportunities and risks. The institutions of the state, the family and the labour market interact at the household level (Ranci 2010). Within households, members contribute and negotiate their individual needs, resources and economic activity (Becker 1985).

Understanding these interrelationships, within which households are embedded, is crucial to understanding social risks, economic inequality and the performance of countries' labour markets and welfare policies (Esping-Andersen 1999; Gregg, Scutella and Wadsworth 2010). This dissertation set out to contribute to this research programme by exploring different methods of studying the household level and its special position in the welfare mix. Bayesian multilevel analyses were performed to study cross-level interactions between social protection and social risks. In addition, event history models were used to analyse household transitions over a period of more than fifteen years. Finally, counterfactual re-weighting methods were combined with a novel measure of income inequality to help visualise the effect of welfare-mix changes on households in different parts of the income distribution.

Important insights have been drawn from these studies; however, several questions have yet to be fully answered and require further study. The first paper successfully demonstrates that certain policy strategies are related to certain inequalities in labour market access. In order to gain a better understanding of these relations, different policies need to be analysed within the same model, and the interactions between them should be considered more closely. Bayesian multilevel models are an attractive analytical tool for such explorations. For them to work most reliably with the proposed, more complex models, a larger sample of countries is needed. Richer and better comparable institutional indicators would be a desirable addition to this approach.

Future research should furthermore seek new statistical strategies to model households' labour market transitions. Jointly modelling the individual labour market transitions of spouses would add tremendously to the findings of the second paper. Exploring the possibilities of random-effects event history models for recurrent events and simultaneous equation models might be an interesting option (see, e.g., Biewen 2004;

Duguet and Simonnet 2007; Goldstein, Pan and Bynner 2004). This strategy would increase the sample size and solve some issues of endogeneity that are common in studies that aspire to grasp individuals' employment status relative to their spouses'. It could also improve the understanding of how population groups differ in their moves between employment and nonemployment in terms of frequency and duration of both labour market states. These transition patterns could be linked to various aspects of individuals' household contexts and highlight different pathways towards either compensation or accumulation of social risks within households. Finally, further exploration of the link between household-level interdependencies and income inequality would be an interesting route to follow. A first step would be including additional economic and institutional developments in the analysis of individual countries.

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Activating households: nonemployment risks and social benefits in Europe

Abstract

The present study examines the impact of activation within unemployment insurance and social assistance schemes on the risk of nonemployment for households. The principal aim is to link institutional features of income protection with social risks of individuals at the household level. Household-level risk factors include age, low education, poor health, household size and the presence of children. The institutional parameters to be analysed relate to the scope of employment-related activities that are mandatory for recipients in order to stay eligible for benefits. Furthermore, eligibility rules of other benefits that may serve as alternatives to unemployment insurance and assistance are studied. The data used stem from the EU-SILC wave of 2011, comparative institutional databases and national legislation. For the analysis, Bayesian multilevel models are used, with a special emphasis on cross-level interactions between policy design and household characteristics. The results confirm that activation and benefit policy influence how social risks within households affect their probability of nonemployment. The magnitude and direction of effects, however, varies across policy area and risk factor.

1. Introduction

Household nonemployment, as an indicator of social exclusion, has gained much attention since the EU included the reduction of jobless households as one measure to meet the anti-poverty targets of the Europe 2020 strategy for jobs and growth (de Graaf-Zijl and Nolan 2011, Copeland and Daly 2012). This interest in household nonemployment results from the observation that successful job-growth policies of the 1990s and 2000s were often ineffective in reducing relative poverty. While they increased the number of fully employed households, the number of households without work remained stable or increased, as well. (Marx et al. 2013 p. 11). This long-term trend of polarisation between work-rich and work-poor households has been observed in most European countries (Corluy and Vandenbrouke 2013, p 18). With growing levels polarisation, individual nonemployment is distributed increasingly unevenly across households. Living in a workless household is associated with higher a higher chance of individual poverty and coincides with certain risk factors, such as low education and disability (p. 24, ibid). Growing polarisation therefore indicates that social risks are less likely than before to be compensated within households. Policies that addressing these risks can influence the extent to which they affect the households' possibilities to participate in the labour market.

The present article therefore examines the risk of household nonemployment in 20 European countries [1], focussing on the influence of the social benefit system on household-level risk factors. Pervious research on individual joblessness shows that nonemployment risks vary among social risk groups and that the effects of different welfare policies vary according to these risks (Biegert 2011, van der Wel 2011). Studies on the nonemployment of households also suggest a strong effect of the design of national welfare systems (Gregg et al. 2010). Over the past 20 years, policy advisors and international institutions (e.g. the OECD and the EU) have promoted active labour market policies as tools to reduce benefit dependency among the working-age population (Armingeon, 2007). There is vast research on the effects of such policies on individual and aggregate unemployment (cf., e.g. Kluve, 2010 and Martin 2015), but comparative studies on the household level are rare (one example being, e.g., Härkönen

[1] Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom

2011). In order to assess how activation affects different social groups, the study of households is crucial as social risks tend to accumulate within them. This study therefore takes an encompassing view on the subject of household joblessness by looking at social risks as they are present and combined at the household level. The principal aim of the study is to link institutional features of income protection with social risks of individuals at the household level. Household-level risk factors include age, low education, poor health and the presence of dependent children. The institutional parameters to be analysed relate to the behavioural or "demanding" aspects of activation, i.e. the scope of employment-related activities that are mandatory for recipients in order to stay eligible for benefits. In addition, the study investigates the impact of exemptions from activation for families with dependent children. Alongside activation, access to several types of income replacement is studied regarding its effect on household joblessness. Members of the same household may be categorised into different states of (non-)employment and may therefore be eligible to a whole range of social benefits, depending on their own characteristics, those of their fellow household members, and on the national context of welfare state regulations.

For the analysis, data from several sources are combined into a multilevel dataset. Institutional information was gathered from comparative databases on social protection (e.g., EuMin, CSB-MIPI, DICE) as well as national legislation, coded numerically and merged with household-level data stemming from the survey dataset EU-SILC. Bayesian multilevel regression is used to model the interactions between benefit design and household-level risk factors. The results suggest that activation and social benefits do influence how social risks influence household nonemployment, but that effects vary across policies and target groups.

The article proceeds as follows. Section 2 provides a background for the dynamics of nonemployment at the household level. It focuses on how activation in its overall context of welfare state benefits may affect the way resources and needs of households influence their labour market behaviour. Section 3 lays out the research strategy used to assess interactions between household characteristics and benefit rules. The subsequent section details the hypotheses, followed by a description of the data sources in section 5. The sixth part of the paper presents the results of the multilevel models, with a special emphasis on cross-level interactions. Section 7 discusses the results and concludes.

2. Background

2.1. Nonemployment and the household level

Comparative studies of household nonemployment can be categorised according to their main perspective. A series of studies has focussed on the dynamics within specific household types, mostly couple households (e.g., Härkönen 2007; McGinnity 2002; Ultee et al. 1988). Others focus on the societal distribution of household nonemployment within and across countries, with a special emphasis on differences between social groups or incidents of poverty and material deprivation (Corluy and Vandenbrouke 2013; de Graaf-Zijl and Nolan 2011; Gregg, Scutella and Wadsworth 2010; Gregg and Wadsworth 2001). The present paper wants to make a contribution to the literature by asking how eligibility rules in social benefit systems influence the risk of household nonemployment.

From the literature on post-industrial labour market risks, we know that the nature of social risks in contemporary European societies is multidimensional. These risks result from the interaction between the demands of modern economies, dynamic family structures and welfare state conditions (Taylor-Gooby 2004). Bonoli (2006) identified 5 situations that are associated with an increased probability of experiencing welfare losses: Problems of reconciling work and family life, single parenthood, having a frail relative, possessing low or obsolete skills, and insufficient social security coverage for certain groups, e.g. for part-time or atypical workers. Social risks can therefore be better understood when considering the household context of individuals. Unemployment, low qualification, disability and care needs can be compensated within households or they may accumulate, resulting in situations of social exclusion and vulnerability (Ranci and Migliavacca 2010). Looking at single social risk factors from a household perspective highlights their overlapping nature: Having children, for example, can be an obstacle for the labour market integration of lone parents if there are no affordable care services available. Härkönen (2011), however, found that children also enhance the risk of dual worklessness for couples. This effect is particularly strong for classic single-earner families: Periods of inactivity decrease the employability of those partners who take on the role of the housekeeper, which makes it harder to counterbalance earnings losses in case the breadwinner becomes unemployed. This effect can be intensified by other risk factors, such as bad health or low education.

Addressing such risks, institutions of the welfare state affect the labour market behaviour of various social groups differently. Biegert (2011) observed that the probability of nonemployment varies with the generosity of unemployment insurance and social assistance, but that effects differ according to gender, age and educational level. Van der Wel et al. (2011) found that nonemployment among the chronically ill is more likely for lower-educated individuals, but that this educational inequality is reduced in countries with a high level of spending on benefit transfers and active labour market policies. The interaction between individual characteristics and labour market chances is further complicated by the way these phenomena interact at the household level. The division of work within households is, for example, influenced by individual preferences, availability of jobs and of childcare as well as parental leave and tax regulations that both reflect and shape cultural attitudes towards mothers' work within society (Härkönen 2011; Kangas and Rostgaard 2007). As a consequence, the distribution of employment across household types varies from country to country (Gregg, Scutella and Wadsworth 2010; Corly and Vandenbrouke 2013). These differences indicate how institutions of the welfare state may influence the impact that household composition has on labour market risks. Activation policies that may help reduce the number of nonemployed households need to be analysed within these nationally distinctive frameworks. The set of welfare elements that were chosen for analysis in this paper are described in the following section.

2.2. Social benefits and activation policy

When comparing joblessness across European countries, it is important to bear in mind that the political regulation of unemployment varies considerably across welfare regimes:

> "For a cross-national analysis, an exclusive focus on unemployment benefits can be deceptive if one is interested in assessing the benefit dependency of the working-age population (…), countries may differ substantially in terms of how they administratively configure the risk of unemployment. In particular, those unemployed who are hard to reintegrate into the labour market are often referred to a range of other out-of-work benefit programmes, which entail different behavioural requirements from their beneficiaries. The most often used alternative exit routes are work incapacity and early retirement. In absence of a

> long-term insurance type of benefit, hard to employ persons may also end up in social assistance schemes" (De Deken and Clasen 2011, p. 309).

The present study therefore examines the impact of activation within unemployment insurance and within social assistance, and additionally takes into account disability pensions, early retirement and non-activating types of minimum income protection. When analysing households, this strategy is beneficial because eligibility to benefits may not be limited to one type of transfer. Within households, the characteristics of all members shape the set of income sources available. The combination of individuals' insurance- and employment records, as well as their health, age and education determine which benefit regulations are most relevant for a household and whether it is necessary and beneficial for its members to engage in labour market participation.

In many European countries, the answer to high and fast rising structural unemployment in the 1970s and 1980s was to decrease labour supply by exempting certain groups of the unemployed from job search requirements or by offering alternative benefits such as early retirement, parental leave and incapacity benefits (Clasen and Clegg, 2011; Ebbinghaus, 2006). By the 1990s, high-scale nonemployment and benefit dependency had become a socio-political issue as a consequence of this political response to the industrial decline of previous decades. Policies had created work disincentives within benefit systems that also influenced the labour supply of younger generations. The fiscal pressure on European welfare systems grew steadily as the increase in social expenditure was additionally intensified by the rising number of regular pensioners. In order to counteract this development, countries turned to policy instruments designed to ‘activate’ benefit recipients for the labour market and to ‘make work pay’. Although countries differed in terms of the scope and type of policies adopted, the general trend was to extend the target groups of activation from those close to the labour market (e.g. officially registered unemployed) to those traditionally perceived as “inactive” (e.g. lone mothers, older unemployed persons or people with reduced work capacity) (Weishaupt, 2013; Eichhorst, et al. 2008).

Clasen and Clegg (2011, p.388) found in their sample of twelve countries that the orientation of the benefit system towards labour market integration is highest in the United Kingdom, Germany, Sweden, Denmark and Hungary. Particularly Denmark and Hungary target long-term social assistance claimants, others put a stronger emphasis on

unemployment insurance claimants. It is likely that activation within both types of social protection has a very different impact on households. Access to insurance-based benefits builds on previous contributions and the amount paid is often independent from the earnings of other household members. In contrast, eligibility for social assistance and other forms of minimum income protection is typically dependent on overall household income (Bahle, Hubl and Pfeifer 2011, p. 14) and an increase in any of the household members' work incomes decreases the amount of the benefit paid. For this reason, minimum income benefits are associated with substantial work disincentives on the household level (Clasen et al. 2006, Gregg, Scutella and Wadsworth. 2010). These should be stronger for bigger households and when low wages are to be expected, as is common for recipients in minimum income schemes. Activation policy can be seen as an effort to overcome these obstacles by introducing financial incentives or several kinds of enabling and demanding elements into the rules of benefit eligibility (Marchal and van Mechelen 2013). Increasing the conditionality of benefit receipt is also an instrument ensure reciprocity: Beneficiaries of minimum income protection generally lack the proof of 'deservingness', unlike insurance claimants that have a record of prior contributions that signal their merit of support (Albrekt Larsen 2008, van Oorschot 2006). As entitlement to minimum income protection is typically based on household-level means testing, activation requirements often include not only the claimant but also his household members. The household level is therefore crucial when studying the effects of activation policy within such benefit schemes, possibly even more than in the case of social insurance.

When studying household-level effects of activation, the treatment of parents, and lone parents in particular, needs to be taken into account as well. Until recently, mothers were generally exempt from work requirements in some countries or enjoyed generous exemptions based on the age of their children (e.g., the United Kingdom, France, the Netherlands and Germany (cf. Bahle, Hubl and Pfeifer 2011, p. 211; Haux 2013, p. 125). These exemptions have been more and more limited, increasing the pressure to work for mothers, or, in the case of obstacles towards employment, to turn to other benefit schemes for the inactive population. These schemes have, however, also witnessed a development towards stronger conditionality. Access to disability pensions relies more heavily than before on work capability tests in several countries, e.g., in Switzerland, Spain or Hungary. Another group that experiences 'recategorisation'

towards employability is the one of older unemployed people. The possibilities to move from unemployment benefits into early retirement has been restricted in many countries and in some, early retirement was abolished all together, e.g. in Belgium and Denmark (Clasen and Clegg 2011, p. 336; Ebbinghaus and Hofäcker 2013). Such restrictions, however, do not necessarily lead to marked increases of employment, as a study by Staubli and Zweimüller (2013) could show for Austria. After increasing the early retirement age, there was only a moderate increase in employment for the highly educated, healthy members of this age group. The less employable moved into unemployment benefits. Another study on Austria by Inderbitzin, Staubli and Zweimüller (2013) found additional substitution effects between unemployment and disability benefits for certain age groups. Such spill-over effects demonstrate how ease - or difficulty - to access several kinds of benefits can either restrict - or complement - the success of activation policies. It is for this reason that they are integrated in the analysis of this paper, whose approach is described in more detail below.

3. Analytical strategy

An ideal data source for analysing the effects of activation strategies would enable researchers to identify of different types of benefits separately. Unfortunately, the internationally comparable micro data available do not have this property. In the majority of datasets (e.g., EU-SILC, EU-LFS, ESS), benefits are classified according to their target group or principal purpose. Recipients of means-tested benefits can be found in the same category as unemployment insurance claimants, pensioners or recipients of contribution-based disability benefits. It is therefore not possible to compare households dependent on different types of transfers directly using international micro data[2]. The solution proposed in this study is based on the assumption that, if activation and benefit availability have measurable effects for households, these should not only be found on the micro level, but also as a macro-effect on micro-level risks of labour market exclusion. In other words, the policy design itself should have an effect on the groups affected by these risks. Therefore, macro-level indicators of activation policy design are combined with international micro data and analysed jointly using statistical models for multilevel data.

[2] Even the Luxembourg Income Study (LIS), whose excellent coding scheme classifies benefits according to target group and type (insurance- vs. assistance-based), can provide such detailed information only for a small selection of countries. http://www.lisdatacenter.org

Three aspects of policy design are examined regarding their effect on the influence of labour-market risk factors on household nonemployment. The first aspect is intensity of activation. Most evaluation studies of activation concentrate on the effects of specific policy instruments on individual employment (cf, e.g., Kluve 2010). In real situations, activation measures tend to be combined. Participation in a training program, for example, may be one element of an individual action plan that is drawn up between the benefit claimant and his case manager. Other behavioural requirements, e.g., the mandatory number of job applications per month, may also be part of this contract. This article therefore aims to look at the effect of a more global measure of activation that takes into account the ensemble of different instruments in unemployment insurance and social assistance. For some households with working-age members, activation may, however, be less relevant when there are other alternatives to work income. For that reason, as a second policy aspect, access to disability- and early retirement benefits are included in the analysis, as well as the overall number of available minimum income protection schemes. The third policy aspect to be studied concerns the exemption of certain groups from activation requirements. Here, special treatment of mothers is considered. The age of children on the basis of which such exemptions are made is taken as an indicator for the analysis. The question of interest is whether these exceptions influence the probability to be out of employment for families in general, and for lone parents in particular.

While the design of benefits and activation may influence whether certain households are out of employment, these policies may also affect the way or magnitude in which individual characteristics influence the risk of household nonemployment. For instance, behavioural conditionality may influence recipients differently according to their abilities and their distance from the labour market. Therefore, the interaction between policy design and labour-market relevant risk factors will be modelled explicitly in the analysis. The risks considered are based on the health, age and education of household members.

The described relationships are analysed by employing a multilevel logit model on household nonemployment, which includes household-level risk factors, macro-level policy indicators and cross-level interactions between the two. The model is fitted using Markov-Chain-Monte-Carlo (MCMC) estimation, which is the method of choice for multilevel models with limited dependent variables and for models with a limited

number of level-2 units, in this case: countries (Stegmueller 2012). MCMC is used for Bayesian inference, which has several benefits in the context of comparative studies: Frequentist statistics rest on the assumption that the units analysed are sampled randomly from a known superpopulation. This assumption is violated in a 'sample' of countries, as case selection depends on region and data availability (Ebbinghaus 2005). Instead of assuming a certain distribution for the variables and coefficients of interest in the superpopulation, Bayesian statistics treat them as unknown and estimate them from the data at hand. The results in multilevel models are usually more conservative and less biased. This advantage is particularly pronounced if the number of level-2 units is below 25. Although the probability of bias in models with cross-level interactions is also given with MCMC estimation, the results will still be more conservative and are therefore preferred over those generated by Maximum Likelihood estimation.

4. Hypotheses

4.1 Household-level risk factors

The study begins by analysing the effects of household composition on the risk of household nonemployment, without taking into account other possible influences. Household composition will be analysed in relation to two sets of social risk factors, which can be broadly categorised into indicators of resources and needs (Gesthuizen and Scheepers 2010, p. 248). The first set defines a household's distance to the labour market by considering the employability of its adult members. Health, education and age are three of the most crucial resources that enable individuals to secure employment and income. These characteristics can accumulate in a favourable or unfavourable way on the household level. The first set of hypotheses of the study therefore defines how employability risks increase households' probability of full nonemployment:

> Hypothesis H1: The probability of household nonemployment increases a) with the number of adult household members experiencing health problems, b) with the age of household adults and c) with a low overall level of education within the household.

The second type of risk factors concerns household structure in terms of size and family constellation. In general, smaller households face a bigger risk of joblessness than those that can rely on the employment of several adults. In addition to the number of adults in a household, the presence of children may intensify this effect (Härkönen 2011). While

increasing the need for income, having children limits the time a household can allocate to paid work, as child care needs are not necessarily covered by the social environment or service providers. The study's second set of hypotheses summarises these relationships between household size and family constellations.

> Hypothesis H2: The probability of household nonemployment increases a) with decreasing number of adult members, b) if there are dependent children living in the household and c) with higher intensity if both risk factors coincide in the case of single parents.

4.2 Intensity of activation policy and employability-based risks

Disadvantages within households in terms of education, age and health can be positively influenced by activation measures such as training or public work programmes. Furthermore, recipients may be motivated to escape the duties and tensions related to benefit receipt. The threat of sanctions and monitoring may even reduce the inflow from employment to out-of-work benefits (Venn 2012, p. 6-7). Households with a low employability profile might therefore reconsider their chances on the labour market. Hypothesis H3 therefore proposes a negative relationship between intensity of activation and the impact of employability risks.

> Hypothesis H3: Activation within a) unemployment and b) social assistance reduces the effects of health limitations, higher age and low education on the risk of household nonemployment.

4.3 Alternative social benefits and employability-based risks

Complementarity and substitution effects between different elements of the benefit system are a common phenomenon in modern welfare states (De Deken and Clasen 2011). For the working age population, disability pensions, early retirement programmes and minimum income benefits that do not require job search for eligibility are possible substitutes for unemployment benefits and activating social assistance. Restrictive access to these 'inactive' benefits should allocate more jobless households to employment or to activating benefits. Therefore, limitations in access to non-activating benefits should have effects that point to the same direction as the effects of activation.

Hypotheses H4: Restriction of access to a) disability benefits, b) early retirement and c) non-activating minimum income protection schemes reduce the effects of health limitations, higher age and low education on the risk of household nonemployment.

4.4 Exemptions for mothers and family-based risks

Exemptions for mothers are typically based on the age of the youngest child (Haux 2013). Granting benefits to mothers without making them conditional on job search guarantees a certain income to socially vulnerable families, but this comes at a price. The longer women stay out of work, the lower are their chances of being in well-paid, stable employment later. Rules of this sort should influence all family households and single parents in particular.

Hypothesis H5: a) In countries with generous exemptions of mothers from activation, the probability of families to be out of employment should be higher than in countries with little exceptions; and b) the high probability of nonemployment for single parents should be further increased by generous exemptions.

5. Description of data and variables

5.1 Household-level data

As a data source for this study, the European Union Statistics on Income and Living Conditions (EU-SILC) offer timely data on the employment, income and living conditions of European individuals and households[3] . Because the interest of the study is on activation policy, the sample was restricted to working-age households. This was done by excluding households from the data set whose adult members are either all above the age of 64 or under 25. This way, pensioners' households do not bias the dependent variable of household nonemployment. Neither do pure students' households and the specific problematic of labour market entrants. The main focus of the study lies on the core of the working-age population. The *dependent variable* was constructed from the current labour market status of the household's adult members. If none of the members was in full-time or part-time work at the time of the interview, the variable "household nonemployment" was set to one, otherwise to zero. The frequency of

[3] For more information visit: http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/introduction

household nonemployment by country can be seen in Appendix A1. The *independent variables* measure various aspects of household composition that are relevant for their chances to compensate for labour market risks. They are summarised in Appendix A2. *The mean age of adults living in the household, their education and health-related limitations in everyday life* serve as indicators for lower employability. Health limitations are chosen because they tend to offer a more objective measure of labour-market relevant impairments than subjective health (Eikemo et al. 2008). The extent of limitations reported by individuals was summed up per household, resulting in a variable of three categories: No health limitations, one person with health limitations, two or more person reporting limitations. Education is captured by the highest qualification of the household members, grouped into three categories: 1 for up to lower secondary, 2 for upper secondary and 3 for tertiary education. Finally, the family structure is given by a dummy variable indicating whether there are children in the household or not and the number of adults in the household.

5.2 Institutional data

The following institutional indicators are used as macro-level explanatory variables in the regression model described above. They enter the model in standardised form and are summarised in Appendix A3. The starting point for the analysis of activation was a collection of indicators published by the MZES project on Minimum Income Protection in 16 European Countries (EuMin, see Hubl and Bahle 2012). EuMin offers quantitative and institutional information on minimum income protection, including a set of indicators on activation requirements. These indicators were updated to match the year of the latest available wave of EU-SILC at the time of writing. They were also collected for four additional countries (Luxembourg, Malta, Norway and Switzerland) in order to achieve the minimum number of countries necessary to get reliable results from a multilevel model using MCMC estimation. As sources for the update, national legislation was used as well as guidelines for recipients and case managers. They were taken from internet sites of the public administration or from online-legislation databases. Whenever there were doubts about how to interpret the regulation, results were compared with three key resources: The 2009 questionnaires on activation gathered by the MIPI project at the CSB in Antwerp (Van Mechelen et al. 2011), the indicators that were based on the update of these questionnaires (Marchal and Van Mechelen 2013), and an earlier OECD article summarizing the situation within MIP in

2007 (Immervoll 2009). Five variables concerning different types of job-related activities were compiled. These variables cover the extent to which individual activity contracts are mandatory, the need to prove active job-search, the requirement of registering as unemployed, and the obligations to participate in qualification measures or public work programmes. The items that could take on three possible values (0 - not mandatory, 1 - if requested, and 2 - generally requested from beneficiaries) were summarised into an additive index of *activation intensity within social assistance*. Another variable measures *exemptions for parents from activation*. In most countries, child-caring parents (or at least lone parents) are not required to participate in activation measures if their child is younger than a certain threshold. The variable records this age limit for exempting lone parents from work obligations. Those countries that have no age-based exemptions from activation were given the value zero.

The *intensity of activation within unemployment insurance* was measured using the indicator of Venn (2012) on the requirement of being available for work during participation in ALMPs. Although at first sight not strictly comparable to the indicator related to minimum income protection, a closer look into the country-by-country description of the indicator revealed a similar logic behind the coding: Stronger availability-to-work criteria correspond to higher intensity of activation because the obligation to participate in one measure cannot be offset by taking part in another one.

Activation should have stronger effects on households if access to other transfer incomes is restricted. The extent to which social assistance claimants are subject to activation is measured by the *level of categorical differentiation within minimum income protection*, i.e., the overall number of means-tested benefits of last resort in a country (variable "prognum" in EuMin). The lower the number, the harder it should be to avoid those minimum income schemes that involve activation for the working age population.

Access to insurance-based benefits is operationalised by measuring the requirements necessary in order to be eligible for disability benefits and early retirement. The relevant information was collected from the Database for Institutional Comparisons in Europe (DICE) of CESifo, Munich (DICE Database 2011), as well as national legislation for some cases, and subsequently self-coded into comparative macro-level indicators. For insurance claims, eligibility is typically based on the number of insured months. Often,

a reference period prior to the claim puts an additional condition on eligibility, as the insurance record only grants benefits if accumulated within this period. This paper therefore measures *access to disability insurance benefits* by grouping countries according to the length of required insurance record and reference period. *Access to early retirement* is operationalised by grouping countries according to the age from which these benefits can be claimed and the extent to which certain groups of the population enjoy more generous conditions.

6. Results

A series of separate random intercept models were fitted for each set of policy variables and its cross-level interactions. MCMC estimation of the models was done using the program MLwiN. Beforehand, the data was merged and prepared for analysis using Stata 13 (StataCorp 2013) and imported into MLWIN using the plugin runmlwin (Leckie 2013, Rasbash2014). Hierarchical centering and orthogonal parameterisation were employed in order to correct for autocorellated chains. The models were fitted using 150 000 iterations and a thinning factor of 30. The model results will be discussed in the order of hypotheses in section 4. First, influences the household level are discussed, i.e. their employment-related resources and composition. Second, the macro effects of activation and benefits for the working age population are analysed. This is followed by an analysis of whether and how activation intensity affects household-level employability risk factors. Next, the effects of non-activating benefits on the same risk factors are modelled. Finally, the interaction between mothers' exemption from activation and household composition are analysed and discussed.

6.1 Household-level risk factors

Model 1 as presented in Table 1 is a random intercept model without macro variables and assesses the validity of the first two sets of hypotheses, H1 addressing the employability of household members and H2 the effects of household structure. The first column of parameters presents the mean logit effect of the independent variables over the MCMC estimation chains. The standard deviation (in brackets), the Bayesian p-value and the effective sample size (ESS) signal high credibility of the estimates. It is also confirmed that fitting a multilevel model is worthwhile, as there is considerable variation across countries: The Median Odds Ratio (MOR, Larsen and Merl 2009)

indicates that, for the base group, moving from a country with a lower risk of household nonemployment to another with a higher risk can increase households' own risk by 46 percent.

The model's constant term refers to an overall reference group of childless, single-adult households of average age with low education and no health-related limitations in daily life. The indicators for adults' average age and health limitations have a positive mean logit effect, which indicates that poor health and higher age increase the likelihood of household nonemployment. The probability of joblessness drops considerably if a household's highest degree is of upper secondary or tertiary education, compared to lower secondary or less. This is in line with H1 and confirms that employability-related resources – or the lack thereof – are important indicators of the risk of households to be without work.

Table 1: Effects of household composition on household nonemployment

		Mean (SD)	Bayes p	ESS
H1a	Health limitations in household (ref: none)			
	Some	0.761 (0.018)	0.000	4712
	High	1.2324 (0.031)	0.000	5058
H1b	Mean age of adults	0.087 (0.001)	0.000	4639
H1c	Maximum education of adults (ref: lower sec)			
	Higher secondary	-0.814 (0.024)	0.000	5070
	Tertiary	-1.381 (0.026)	0.000	4942
H2a	Number of adults in household (ref: one)			
	2 adults	-0.897 (0.023)	0.000	4932
	3 or more	-1.731 (0.040)	0.000	4932
H2b	Dependent children in household	2.652 (0.107)	0.000	4827
	Age * children	-0.058 (0.002)	0.000	4984
H2c	2 Adults * children	-0.710 (0.039)	0.000	5319
	3+ Adults * children	-0.241 (0.06)	0.000	6160
	Constant	-4.446 (0.114)	0.000	5366
	Level-2 Variance	0.160 (0.058)		5296
	MOR	1.46		
	Bayesian DIC	91629.7		

Random intercept logit models of household nonemployment in 20 European countries.
N households: 122599. MCMC estimation using MLwin (burnin: 1000, chain: 150000, thinning: 30).
Data Source: EU-SILC 2014

Turning to household structure, H2 seems to hold as well. The likelihood for full nonemployment decreases with the number of adult household members. Children increase the risk of household nonemployment. This effect is weakened with rising age of the adult household members and if more than one adult is present in the household. Young, single parents, thereby, have a particularly strong risk of nonemployment.

While all of the models shown later also contain the individual-level variables, their effects are not reported further in the analysis. They proved stable over models and in line with Hypotheses H1 and H2, independently of which macro variable or cross-level interaction was introduced.

6.2 Policy design and employability-based risks

The set of hypotheses H3 and H4 relate to interactions between the regulation of social benefits and the household-level risk factors of impaired health, age and low education. Before addressing these interactions, a brief discussion of Table 2 informs about the 'pure' effects of the policy variables, resulting from multilevel models without cross-level interactions. The table suggests that some of the policies under study have a credible macro effects on of household nonemployment. The random part of the model, i.e. the variance of the intercept by country, varies across model specifications, further indicating that the policy variables explain some of the differences in household nonemployment across countries. In countries with strict activation within unemployment insurance, the risk of household nonemployment tends to be lower. Activation within social assistance does not have a credible macro effect, which may be related to the fact that less people are affected by benefits of last resort. This may also be the reason why access to early retirement has no overall effect. In contrast, disability benefits and categorical differentiation within minimum income protection do have an influence on the probability of household nonemployment. In countries with restricted access to disability pensions, households are more likely to be fully out of employment. Restricting options within minimum income protection, however, is related to lower probabilities of household nonemployment.

Table 2: Macro effects of benefit system on household nonemployment

Policy Effects	Mean effect	Constant	Level-2-Variance	MOR	Bayesian DIC
Activation intensity, unemployment Insurance	-0.193**	-4.448**	0.127	1.40	91629.592
Activation intensity, social assistance	0.013	-4.448**	0.169	1.48	91629.579
Strictness of access to disability benefits	0.137•	-4.450**	0.144	1.44	91629.759
Strictness of access to early retirement	-0.066	-4.450**	0.166	1.47	91629.529
Limited categorical differentiation of MIP	-0.154*	-4.448**	0.139	1.43	91629.786

*Random intercept logit models of household nonemployment in 20 European countries (N households: 122599). Reported estimates are means of logit coefficients resulting from MCMC estimation using MLwin (burnin: 1000, chain: 150000, thinning: 30). • Bayesian p-value <0.1, * Bayesian p-value < 0.05, ** Bayesian p < 0.01. ESS for macro effects between 120 and 200 (ESS > 4000 for all individual-level fixed effects). Individual fixed effects are controlled for but not reported as they are constant over models and similar to those in Table 1.*

Data Source: EU-SILC 2014, own calculations based on EuMin, CSB MIPI, Venn (2012), CESifo and national legislation.

The hypotheses relating to activation intensity and household-level risk factors are tested using 6 separate models, which are reported in Table 3. The first three assess the cross-level interactions of activation within unemployment insurance with health-, age- and educational risks. The fourth, fifth and sixth model assess the cross-level interactions of activation within social assistance. The mean coefficients of policy variables and of the interaction effects are reported. Interactions are to be interpreted as effects of the policy variables on the household-level variables' slopes. These effects are illustrated in Figure 1, which plots the predicted probabilities of household nonemployment for the different risk groups and levels of activation.

Table 3: Activation intensity and the effects of household-level labour market risks

	Hypothesis H3a			Hypothesis H3b		
	Health	Education	Age	Health	Education	Age
Activation intensity, unemployment insurance	-0.170*	-0.253**	-0.613**			
Activation * some health limitations	-0.002					
Activation * high health limitations	-0.111**					
Activation * secondary education		0.054**				
Activation * tertiary education		0.153**				
Activation * mean age			0.008**			
Activation intensity, social assistance				-0.034	0.091	0.575**
Activation * some health limitations				0.083**		
Activation * high health limitations				0.130**		
Activation * secondary education					-1.104**	
Activation * tertiary education					-0.064*	
Activation * mean age						-0.011**
Constant	-4.449**	-4.453**	-4.489**	-4.435**	-4.455**	-4.602**
Level-2 Variance	0.128	0.136	0.125	0.166	0.174	0.173
MOR	1.41	1.42	1.40	1.47	1.49	1.49
Bayesian DIC	91618.370	91593.730	91543.392	91602.173	91616.936	91499.047

*Random intercept logit models of household nonemployment in 20 European countries (N households: 122599). Reported estimates are means of logit coefficients resulting from MCMC estimation using MLwin (burnin: 1000, chain: 150000, thinning: 30). * Bayesian p-value < 0.05, ** Bayesian p < 0.01. ESS > 4000 for all individual-level fixed effects (ESS for macro effects between 120 and 200). Individual fixed effects are controlled for but not reported as they are constant over models and similar to those in Table 1.*

Data Source: EU-SILC 2014, own calculations based on EuMin, CSB MIPI, Venn (2012) and national legislation.

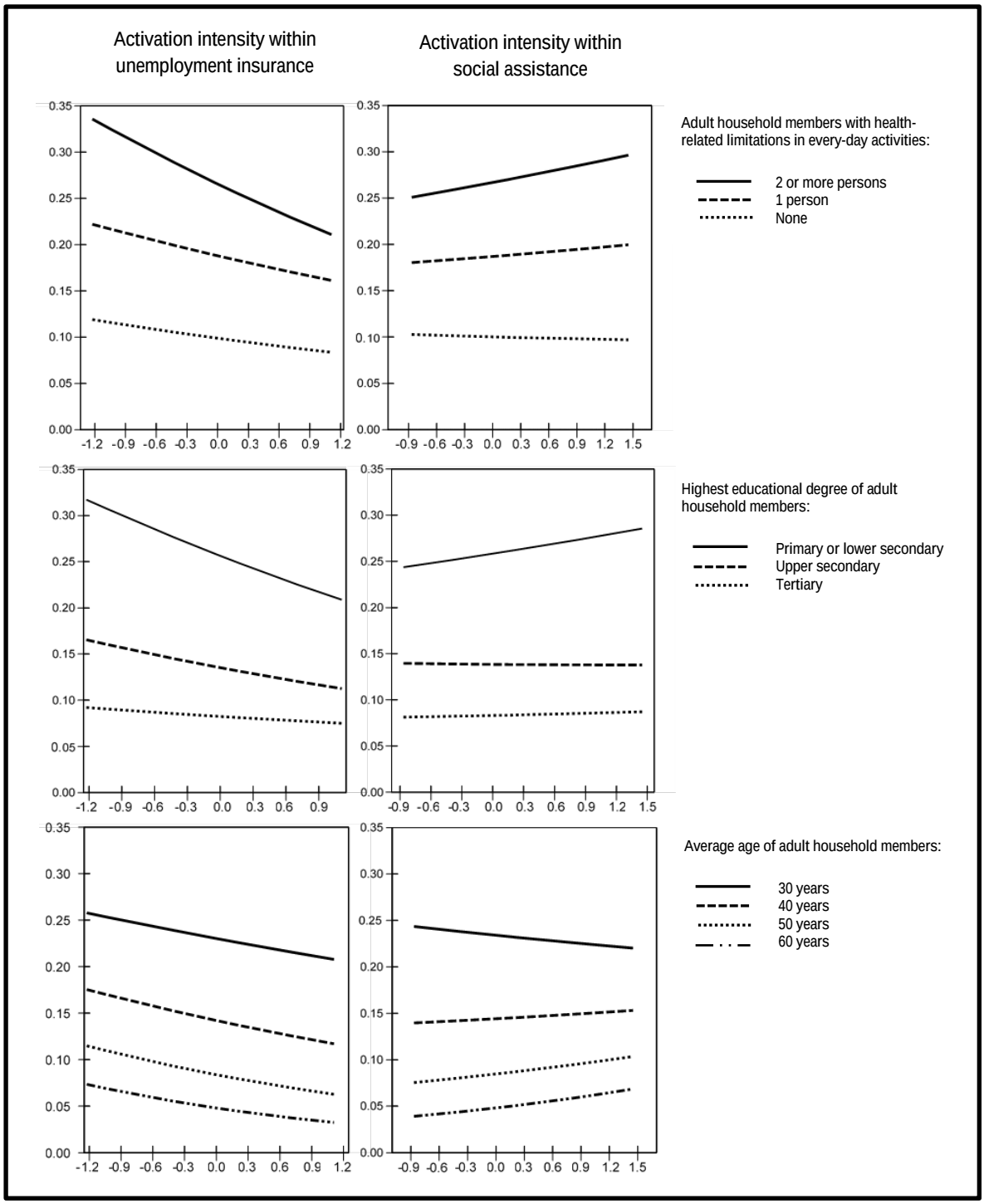
The logits of unemployment insurance stay negative across all models, suggesting that strict activation is related to lower probabilities of household nonemployment. Accordingly, the left-hand-side of Figure 1 shows negative slopes for all plotted lines. Their steepness does, however, vary due to the modelled cross-level interactions. In Table 3, the mean interaction effect with health limitations is negative and turns credible for households having two or more members with substantial health problems. The risk of household nonemployment due to health limitations (cf. Table 1) is, thus, less severe in countries with strong activation rules within unemployment insurance. Table 1 has

shown smaller risks of household nonemployment for medium- to highly educated households. The positive interaction effects for education in Table 3 suggest that such differences can be reduced by activation policy, and plotting the effects in Figure 1 specifies how. The middle-left plot reveals that the probability of nonemployment for highly educated households varies hardly across countries with different activation rules in unemployment insurance. Variation for households with upper secondary education is slightly more pronounced, but it is the lower educated households that react strongest to activation. Their labour market situation is better in countries that apply strict rules of activation within unemployment insurance. Older households, on the other hand, seem slightly worse off according to Table 3. This effect, however, is only minimal as can be seen in the lower left cell of Figure 1.

Although activation within social assistance does not have a direct effect (cf. Table 2), it does show interactions with social risks at the household level. Interestingly, they are contrary to those of unemployment insurance: Health-related risks of nonemployment seem to increase in countries that apply strong activation rules to social assistance, differences between educational groups are further pronounced, and the effect of age decreases.

In the interaction model between activation in social assistance and age, the policy indicator becomes credible and is positive. This indicates that the probability for households to be nonemployed is generally higher in countries with strongly activating social assistance schemes, but that the probability of older households is slightly lower. The lower-right cell of Figure 1 confirms this interpretation by showing a fanning-in pattern of the lines for different age groups. The remaining graphs show a fanning-out pattern, pointing to stronger differences between health and educational groups in countries with intense activation within social assistance, which contradicts the hypotheses above. The result may be related to a “creaming”-effect of activation policy that occurs under certain conditions (Martin 2015): Those more closely to the labour market profit most from integration measures while the least employable remain in benefit receipt, despite obligatory programmes and possible sanctions.

Figure 1: Activation policy and household-level labour market risks, cross-level interaction effects on the probability of household nonemployment



Predicted probabilities of household nonemployment, dependent on activation intensity in unemployment insurance and social assistance, based on the results of MCMC estimations of random intercept logit models for 20 countries.

Data Source: EU-SILC 2014, own calculations based on EuMin, CSB MIPI, Venn (2012) and national legislation.

The set of hypotheses H4a-c is based on the assumption that the availability of alternative social benefits may counteract activation policies in unemployment insurance and assistance. As countries' caseloads of disability pensions or early retirement differ more strongly than actual differences in health would suggest, ‘hidden unemployment’ is likely to be found if access to such benefits is relatively easy. Therefore, limiting access to 'non-activating' benefits could have results that resemble those of activation policy. As these benefits are intended for people with reduced employability due to health impairments or higher age, access to benefits should affect how such risks influence household nonemployment. Table 4 presents the results of nine random intercept models that address this assumption. Policy effects and cross-level-interactions of restricted access to disability pensions, early retirement and non-activating minimum income protection are reported. Figure 2 illustrates the results.

Some of the effects in Table 4 match expectations: Restricting early retirement benefits reduces age- and educational inequalities in household nonemployment. Other risk factors seem emphasised when access to benefits is limited: Educational and age groups differ more in terms of household nonemployment in those countries that restrict access to disability pensions and minimum income benefits.

Interestingly, there is no credible cross-level interaction between disability pensions and health. Smaller interactions can be found between early retirement and households with some health impairment, and between minimum income protection and heavy impairment within households. Yet, Figure 2 suggests that they are negligible, as are the interactions between the number of minimum income schemes, education and age. Nevertheless, the direct negative effect of differentiated minimum income protection on household nonemployment remains visible across models. Countries with low categorical differentiation within minimum income protection may select more claimants into benefits that are tied to activation measures by design. Countries with a high number of different minimum income schemes tend to grant more exemptions from activation, e.g., for people with reduced work ability, longer work histories or exhausted insurance claims.

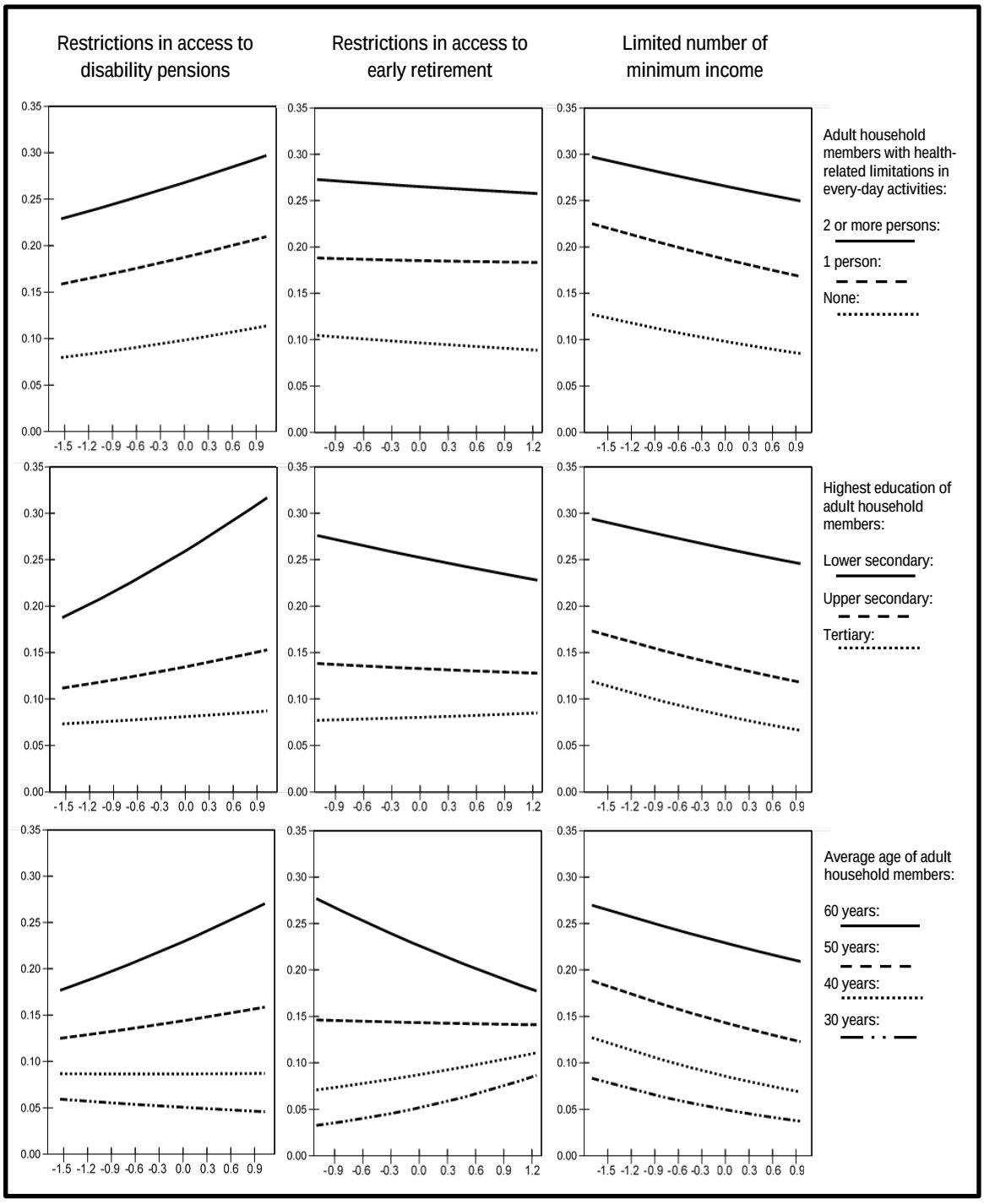
Table 4: Restrictive access to 'inactive' benefits and household-level labour market risks

	Health	Education	Age
Hypotheses H4a			
Limited access to disability pensions	0.153*	0.276*	-0.426**
Disability * some health limitations	-0.020		
Disability * high health limitations	-0.014		
Disability * secondary education		-0.136**	
Disability * tertiary education		-0.204**	
Disability * mean age			0.011**
Constant	-4.449**	-4.440**	-4.463**
Level-2 Variance	0.143	0.145	0.146
MOR	1.43	1.44	1.44
Bayesian DIC	91632.584	91574.781	91471.714
Hypotheses H4b			
Limited access to early retirement	-0.084	-0.188	1.152**
Early retirement * some health limitations	0.065**		
Early retirement * high health limitations	0.045		
Early retirement * secondary education		0.074**	
Early retirement * tertiary education		0.159**	
Early retirement * mean age			-0.023**
Constant	-4.454**	-4.452**	-4.436**
Level-2 Variance	0.163	0.174	0.156
MOR	1.47	1.49	1.46
Bayesian DIC	91621.498	91596.362	90916.576
Hypotheses H4c			
Limited categorical differentiation of minimum income protection	-0.174*	-0.097	-0.487**
Categorical differentiation * some health limitations	0.032		
Categorical differentiation * high health limitations	0.079**		
Categorical differentiation * secondary education		-0.077**	
Categorical differentiation * tertiary education		-0.148**	
Categorical differentiation * mean age			0.006**
Constant	-4.451**	-4.429**	-4.445**
Level-2 Variance	0.139	0.138	0.135
MOR	1.43	1.43	1.42
Bayesian DIC	91626.696	91602.967	91581.134

Random intercept logit models of household nonemployment in 20 European countries (N households: 122599). Reported estimates are means of logit coefficients resulting from MCMC estimation using MLwin (Burnin: 1000, chain: 150000, thinning: 30).
** Bayesian p-value < 0.05, ** Bayesian p < 0.01. ESS > 4000 for all individual-level fixed effects (ESS for macro effects between 120 and 200). Individual fixed effects are controlled for but not reported as they are constant over models and similar to those in Table 1.*

Data Source: EU-SILC 2014, own calculations based on EuMin, CESifo and national legislation.

Figure 2: Restrictive access to 'inactive' benefits and household-level labour market risks: Cross-level interaction effects on the probability of household nonemployment



Predicted probabilities of household nonemployment, dependent on activation intensity in unemployment insurance and social assistance, based on the results of MCMC estimations of random intercept logit models for 20 countries.

Data Source: EU-SILC 2014, own calculations based on EuMin, CESifo and national legislation.

As minimum income protection, disability benefits also show credible macro effects on household nonemployment, but in contrast to the former, they are positive. The probability of household nonemployment is higher in countries that control access to disability benefits more. The fanning-out patterns found on the left-hand side of Figure 2 show that it is primarily the low-educated and higher-age households that drive this effect. Younger households even have lower probabilities of nonemployment in countries with restricted disability pensions, which may be a consequence of the long insurance records needed to become eligible for benefits. The strong effect for lower educated households could be a hidden effect of health issues in this group. The health variable used in this analysis may be biased towards physically limiting conditions. Incapacity pensions, however, are also granted in the case of other health issues. As lower educational groups tend to have a lower health status on average (Haan and Myk 2009), they may be more likely than others to receive disability pensions in countries that grant access to such benefits based on very strict criteria. The cross level interaction effects for early retirement are contrary to those of disability benefits, which is particularly visible for households' mean age: The lines plotted show a fanning-in pattern, indicating that age differences are less pronounced in countries that have few possibilities of early retirement. Households above 50 are less likely to be out of employment, whereas households with a mean age of 30 or 40 are more likely. Keeping older workers in the labour market, thus, may limit the young generations' possibilities of employment. This adverse effect appears to be more pronounced for the low-skilled: The interaction with education indicates that closing the route of early retirement has the strongest effect on lower-educated households.

6.4 Exemptions for mothers and family-based risks

The last aspect that this paper looks at is the influence of activation policy on families. Higher conditionality towards mothers is expected to reduce household nonemployment of family households (Hypothesis H5a), and of lone parent families in particular (H5b). The models presented in Table 5 test these hypotheses by interacting exceptions from activation based on children's age with family structure. In order to evaluate whether families in general react to such exceptions, the policy variable is interacted with a dummy that measures whether there are children present in the household. For testing the assumption that lone parents are particularly affected by activation, a three-way interaction is introduced between exceptions, the presence of children and the number

of adults, i.e., whether there are two or more adults present in the household. Results of models that only contain the policy variable and the interaction with the number of adults are also reported, as they serve as a 'baseline' to the full interaction model, together with the one focussing on the presence of children.

Table 5: Family-based exemptions from activation and the effects of household structure

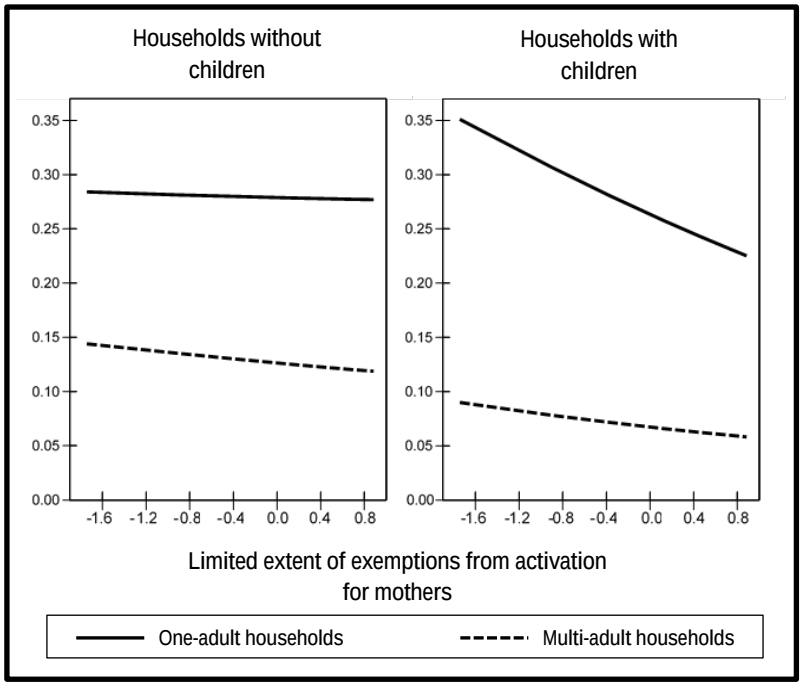
	Baseline		Hypothesis H5	
	Policy effect	Household size	H5a) families	H5b) lone parents
Generosity of age exception	-0.099	-0.101	-0.054	-0.015
Exceptions * 2 or more adults		-0.024		-0.071**
Exceptions * children in household			-0.137**	-0.227**
Exceptions * adults * children				0.131**
Constant	-4.559**	-4.561**	-4.560**	-4.560**
Level-2 Variance	0.144	0.145	0.142	0.144
MOR	1.44	1.144	1.43	1.44
Bayesian DIC	92191.432	92191.653	92139.268	92131.294

*Random intercept logit models of household nonemployment in 20 European countries (N households: 122599). Reported estimates are means of logit coefficients resulting from MCMC estimation using MLwin (burnin: 1000, chain: 150000, thinning: 30). * Bayesian p-value < 0.05, ** Bayesian p < 0.01. ESS > 4000 for all individual-level fixed effects (ESS for macro effects between 120 and 200). Individual fixed effects are controlled for but not reported as they are constant over models and similar to those in Table 1.*

Data Source: EU-SILC 2014, own calculations based on EuMin, CSB MIPI and national legislation.

The baseline models show no credible direct effect of exemptions, nor of its interaction with the number of adults. There is, however a sizable interaction with the presence of children. Thus, reducing exceptions for mothers in activation reduces the probability of household nonemployment for families. This interaction stays credible in the model that contains all interaction terms, underpinning that there is an effect on all families. The Bayesian DIC value is smallest in the full model, indicating that family structure plays an important role and mustn't be ignored. The three-way interaction term is credible and positive. This coefficient can be interpreted as the slope effect of the number of adults on the 2-way interaction term between exceptions and children. As the 2-way interaction is negative, a positive 3-way interaction indicates a weakening of this effect. Thus, once there is more than one adult living in a household, the effect of activation-exceptions on the child-effect on nonemployment is less pronounced. Figure 3 illustrates this result. On the right-hand side, the slope for lone parents falls more steeply than the one for other family households. Families in countries that do not exempt mothers from activation have a lower probability of nonemployment as compared to countries that exempt them. This effect, however, is much more pronounced for lone parents.

Figure 3: Family-based exemptions from activation and household structure: Cross-level interactions on the probability of household nonemployment.



Predicted probabilities of household nonemployment, dependent on activation intensity in unemployment insurance and social assistance, based on the results of MCMC estimations of random intercept logit models for 20 countries.

Data Source: EU-SILC 2014, own calculations based on EuMin, CSB MIPI and national legislation.

Interestingly, in the full model, the 2-way interaction between the number of adults and the policy variable turns credible and is negative. The left cell of Figure 3 plots this effect as it concentrates solely on households without children. The probability of singles to be nonemployed does not vary across countries with different activation rules for parents, but there seems to be a slight effect on couples even if they do not have children. This might be an indication that activation policy reflects cultural values on the division of work within households. It may also be a long-term effect on women's employment chances. In welfare states that encourage women to stay employed in the phase of childrearing, the probability of couples' joint nonemployment in later life may be significantly reduced (cf. Härkönen 2007). Overall, the results show that activation does increase the employment of families, especially of single mothers, which is in line with hypotheses H5a and H5b.

7. Discussion and conclusion

Most studies on joblessness and activation concentrate on individual unemployment or model the employment of individuals controlling for household context. Considering the household itself as level of analysis is another building block for the understanding of the social impacts of worklessness (Gregg et al. 2010). This study analysed the general risk for households to be out of work, whether officially unemployed or 'inactive', as the political regulation of unemployment varies considerably across European welfare regimes (De Deken and Clasen 2011). Activation within unemployment insurance and minimum income protection were analysed alongside access to other benefit types, particularly disability pensions and early retirement, with regards to their interaction with household-level risk factors of impaired health, high age and low education. Being a small household is another risk factor as it is difficult to compensate for a wage loss without other potential workers in the household (Gregg et al. 2010). Having children intensifies this risk (Härkönen 2011). In order to grasp such constellations, the interaction between household structure and rules for activating mothers within activation was investigated.

The analysis was based on EU-SILC and institutional data collected from internationally comparative databases and national legislation. Bayesian multilevel logit models could show that the probability of household nonemployment varies considerably across countries and that activation and benefit policies have an influence on how household-level risk factors affect this probability. An important finding is that policies do not influence all household-level risk factors to the same extent. Nor do the effects point to the same direction. Disability and early retirement are mainly related to education and age, but in a contrary manner, suggesting that they work to some extent as substitutes for social risk groups. Activation within unemployment insurance has stronger interaction effects with health and education than with age. Overall, it seems to decrease social inequalities in terms of household nonemployment. The effects of activation within social assistance differ from those of unemployment insurance. In countries that emphasise activation within means-tested benefits, health and educational differences in household nonemployment are more pronounced, while differences between age groups are smaller. Older households seem to benefit, while younger households with low education or bad health lose out. On first sight, having access to other types of minimum income benefits seems unlikely to influence the dynamics of

activating social assistance, since there are no substantial interactions with household risks. Nevertheless, there is a direct macro effect of restricting the number of available minimum income schemes. Countries with a lower number of such benefit programmes have a lower overall probability of household nonemployment. Activation within unemployment insurance also has a decreasing effect on household nonemployment. There is, thus, some evidence speaking in favour of the assumption that restricting the possibilities to obtain transfer income has effects that resemble those of activation. Both policies can therefore mutually reinforce themselves, but there are limits. For households with limited work capability, restricting disability pensions may have adverse effects. A possible scenario is that these households are then dependent on minimum income protection, making them subject to household-level means testing, which decreases their overall incentives to work (see section 2.2). Since activation within means-tested benefits has its own dynamics, policy makers need to take a closer look on whether the design of employment programmes and their governance are suitable for the specific target groups at hand. Social assistance is typically administered and financed on the regional or municipal level, as is activation of such benefits. Budgets are therefore tighter than in the case of unemployment insurance. These systems may be particularly affected by the general trend in European activation policies of improving cost efficiency by outsourcing employment services to private providers and monitoring the performance of agencies' case workers in quantitative terms (Van Berkel, De Graaf and Sirovátka 2012). Thus, there are strong incentives at policy-implementation level to focus primarily on activating benefit recipients who have greater chances of labour market success. In such a system, households with low education or severe health problems may be even less likely to exit nonemployment than in countries where activation is less intense or evenly distributed across social groups. Therefore, policy design should include mechanisms to ensure that the targeting of activation programmes works in a reasonable way. Public means on activation should not be spent on measures that mainly help those that could be able to find a job on their own, while socially vulnerable persons and their entire households are further marginalised on the labour market, and in society.

This discussion of results highlights the complexity of interactions between policies and social risks on the household level. It also points to an important issue that stayed largely unaddressed in this paper, namely the role of unobserved macro-level variables

that may confound with the found effects. In order to test for this possibility, a country fixed effects model was computed to reassess the study's results (see Appendix A4). It contains the individual predictors, their cross-level interactions with the policies under study and dummy variables for all countries, thus controlling for unobserved heterogeneity on the country level. The results confirm those of the random intercept models, which speaks in favour of the conclusions presented. Another caveat is that the available information on activation in unemployment insurance and minimum income protection are not one-to-one identical. While the indicator for minimum income protection includes all activities mandatory for activated recipients, the unemployment insurance indicator specifies how work availability requirements might be offset by participating in another activation measure. Both of these indicators measure how intense activation is for those who are subject to it, but a stricter comparability would be desirable. A last word of caution needs to be said about endogeneity issues. As this is a cross-sectional study, statements about effects in this paper should not be interpreted wholeheartedly as proclamations of causal relationships. In the case of individual risk factors, for example, it is clear that nonemployment can be caused by health-induced work impairments. Nevertheless, nonemployment has been proven to cause health status to decline over time through mechanisms of material deprivation and social exclusion (Gesthuizen and Scheepers 2010). Another problem of endogeneity exists between policy design and nonemployment. While eligibility rules of benefits do influence peoples' employment decisions, it is also the case that regulations change as a result of macro-level nonemployment rates (Martin 2015).

In spite of these constraints, the results underline that household-level problematics should be taken into account when discussing the effectiveness of activation policies. The findings also demonstrate the importance of the overall welfare state context as influencing factor on household nonemployment. The models strongly suggest that some elements of social protection interact more with household risks than others. Moreover, the effects of some risk factors vary highly according to policy design, but others are hardly affected by social policy interventions. As institutional developments of welfare states "are driven by changing risk structures in labour markets, but are simultaneously defining and cementing them" (Clasen and Clegg 2011, p. 345), future research should continue to pay attention to such dynamics. A bigger sample of countries would be necessary to study combinations of different welfare state

instruments on a large, comparative scale. The next step would surely be the analysis of interactions between activation and benefit design. Including the time dimension as additional level of analysis could solve some endogeneity issues and shed more light on the interplay between nonemployment and social policies and on households' reactions to these dynamics.

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Appendix

A1: Macro-level institutional variables

Country	AT	BE	CH	CZ	DE	DK	ES	FI	FR	HU	IE	LU	MT	NL	NO	PL	PT	SE	SK	UK	Mean
Activation requirements in social assistance:																					
Active job search	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	0	1	0.8
Register as unemployed	2	0	1	1	2	1	0	1	1	2	2	1	1	2	1	1	1	2	0	2	1.2
Participate in training programmes	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	0.85
Participate in work programmes	0	1	0	1	1	1	1	1	1	2	1	1	0	1	1	1	0	1	0	1	0.8
Sign an activation contract	0	1	1	1	2	1	1	1	2	2	0	1	0	1	1	1	1	1	1	2	1.05
Sum of activation requirements	3	4	4	5	7	5	4	5	6	7	5	4	2	6	5	5	3	6	1	7	4.7
Standardised sum of requirements	-1.07	-0.44	-0.44	0.19	1.45	0.19	-0.44	0.19	0.82	1.45	0.19	-0.44	-1.7	0.82	0.19	0.19	-1.07	0.82	-2.34	1.45	0
Availability for work during participation in ALMPs of unemployment insurance																					
extent of requirement	8	5	9	7	7	7	7	5	8	4	4	5	9	9	6	5	6	6	9	8	6.7
standardised extent requirement	0.79	-1.03	1.40	0.18	0.18	0.18	0.18	-1.03	0.79	-1.64	-1.64	-1.03	1.40	1.40	-0.43	-1.03	-0.43	-0.43	1.40	0.79	0
Restrictive access to disability pensions																					
Ranking of countries	4	2	3	4	4	1	2	1	2	4	4	3	4	1	3	4	3	1	4	2	2.8
Standardised ranking of countries	1.03	-0.69	0.17	1.03	1.03	-1.54	-0.69	-1.54	0.69	1.03	1.03	0.17	1.03	-1.54	0.17	1.03	0.17	-1.54	1.03	-069	0
Restrictive access to early retirement																					
Ranking of countries	2	2	2	1	2	4	3	4	1	1	4	1	2	4	4	1	1	4	1	4	2.4
Standardised ranking of countries	-0.31	-0.31	-0.31	-1.09	-0.31	1.25	0.47	1.25	-1.09	-1.09	1.25	-1.09	-0.31	1.25	1.25	-1.09	-1.09	1.25	-1.09	1.25	0
Limited categorical differentiation of minimum income protection																					
Number of minimum income schemes	3	7	2	1	5	5	7	2	9	3	13	3	12	7	2	1	4	3	1	4	4.7
Reversed number schemes	11	7	12	13	9	9	7	12	5	11	1	11	2	7	12	13	10	11	13	10	9.3
Standardised reversed number of schemes	0.50	-0.68	0.79	1.09	-0.09	-0.09	-0.68	0.79	1.26	0.50	-2.44	0.50	-2.14	-0.68	0.79	1.09	0.21	0.50	1.09	0.21	0
Exceptions for mothers																					
Age criterion for mothers' children	2	10	3	3	2	0	0	0	3	14	18	10	10	5	2	0	18	0	0	6	5.3
Reversed age criterion	17	9	16	16	17	19	19	19	16	5	1	9	9	14	17	19	1	19	19	13	13.7
Standardised reversed age criterion	0.57	-0.80	0.39	0.39	0.57	0.91	0.91	0.91	0.39	-1.49	-2.17	-0.80	-0.80	0.05	0.57	0.91	-2.17	0.91	0.91	-0.12	0

Source: Own calculations based on EuMin, CSB MIPI, CESifo and national legislation.

A2: Household nonemployment by country

Country	Employed households	%	Nonemployed households	%	Total households	%
AT	3,689.00	78.2	1,029.00	21.8	4,718.00	100
BE	3,415.00	74.8	1,150.00	25.2	4,565.00	100
CH	4,893.00	87.1	722	12.9	5,615.00	100
CZ	5,201.00	79	1,383.00	21	6,584.00	100
DE	7,831.00	79.6	2,004.00	20.4	9,835.00	100
DK	3,485.00	84.2	656	15.8	4,141.00	100
ES	7,936.00	78	2,234.00	22	10,170.00	100
FI	6,026.00	82.4	1,287.00	17.6	7,313.00	100
FR	6,707.00	79.1	1,768.00	20.9	8,475.00	100
HU	6,764.00	72.7	2,538.00	27.3	9,302.00	100
IE	2,180.00	70	934	30	3,114.00	100
LU	3,796.00	81.3	876	18.8	4,672.00	100
MT	2,341.00	74.1	819	25.9	3,160.00	100
NL	7,192.00	86.7	1,107.00	13.3	8,299.00	100
NO	3,214.00	89.3	386	10.7	3,600.00	100
PL	7,753.00	74.7	2,623.00	25.3	10,376.00	100
PT	3,128.00	80.3	767	19.7	3,895.00	100
SE	4,368.00	89.3	524	10.7	4,892.00	100
SK	3,530.00	83	722	17	4,252.00	100
UK	4,517.00	80.4	1,104.00	19.6	5,621.00	100
Total	97,966.00	79.9	24,633.00	20.1	122,599.00	100

Source: EU-SILC 2014 (Wave 2011)

A3: Household-level independent variables

Continuous:

Mean age of adults in household	Mean	Std. Dev.	Min	Max	Obs
if at least one person is employed	45.58	10.04	21.50	77.00	97,966
if household is nonemployed	54.83	11.12	22.00	80.00	24,633
Total	47.44	10.91	21.50	80.00	122,599

Categorical:

	Household Nonemployment					
	0	%	1	%	Total	%
Adults in household with health-related limitations						
none	72,076	86.0	11,749	14.0	83,825	100.0
one	20,910	68.4	9,675	31.6	30,585	100.0
two or more	4,980	60.8	3,209	39.2	8,189	100.0
Total	97,966	79.9	24,633	20.1	122,599	100.0
Children in household						
no	43,627	70.1	18,603	29.9	62,230	100.0
yes	54,339	90.0	6,030	10.0	60,369	100.0
Total	97,966	79.9	24,633	20.1	122,599	100.0
Number of adults in household						
one	20,004	66.6	10,027	33.4	30,031	100.0
two	67,089	84.1	12,650	15.9	79,739	100.0
three or more	10,873	84.8	1,956	15.2	12,829	100.0
Total	97,966	79.9	24,633	20.1	122,599	100.0
Highest education of adults in household						
up to lower secondary	10,487	57.6	7,712	42.4	18,199	100.0
higher secondary	44,584	78.9	11,944	21.1	56,528	100.0
tertiary	42,895	89.6	4,977	10.4	47,872	100.0
Total	97,966	79.9	24,633	20.1	122,599	100.0

Source: EU-SILC 2014 (Wave 2011)

A4: Country fixed effects **logit models of household nonemployment**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Health limitations in household (ref: none)							
Some	0.762 ***	0.732 ***	0.762 ***	0.753 ***	0.759 ***	0.76 ***	0.761 ***
High	1.233 ***	1.197 ***	1.212 ***	1.231 ***	1.246 ***	1.227 ***	1.232 ***
Mean age of adults	-0.813 ***	-0.789 ***	-0.801 ***	-0.838 ***	-0.834 ***	-0.841 ***	-0.81 ***
Maximum education of adults (ref: lower sec)							
Higher secondary	-1.381 ***	-1.373 ***	-1.364 ***	-1.418 ***	-1.407 ***	-1.411 ***	-1.376 ***
Tertiary	0.087 ***	0.091 ***	0.088 ***	0.088 ***	0.087 ***	0.087 ***	0.087 ***
Number of adults in household (ref: one)							
2 adults	-0.897 ***	-0.900 ***	-0.9 ***	-0.886 ***	-0.88 ***	-0.894 ***	-0.885 ***
3 or more	-1.731 ***	-1.737 ***	-1.73 ***	-1.717 ***	-1.71 ***	-1.722 ***	-1.72 ***
Dependent children in household	2.652 ***	2.688 ***	2.564 ***	2.741 ***	2.797 ***	2.637 ***	2.632 ***
Age * children	-0.058 ***	-0.059 ***	-0.056 ***	-0.06 ***	-0.061 ***	-0.058 ***	-0.058 ***
2 Adults * children	-0.711 ***	-0.700 ***	-0.715 ***	-0.722 ***	-0.719 ***	-0.71 ***	-0.719 ***
3+ Adults * children	-0.241 ***	-0.208 **	-0.267 ***	-0.221 **	-0.199 **	-0.244 ***	-0.251 ***
Activation intensity, unemployment insurance							
Activation * some health limitations		0.117 ***					
Activation * high health limitations		0.194 ***					
Activation * secondary education		-0.107 ***					
Activation * tertiary education		-0.055 "					
Activation * mean age		-0.012 ***					
Activation intensity, social assistance							
Activation * some health limitations			-0.016				
Activation * high health limitations			-0.144 ***				
Activation * secondary education			0.06 *				
Activation * tertiary education			0.155 ***				
Activation * mean age			0.009 ***				
Restrictive access to disability pensions							
Disability * some health limitations				-0.047644 **			
Disability * high health limitations				-0.0776644 *			
Disability * secondary education				-0.1277197 ***			
Disability * tertiary education				-0.200375 ***			
Disability * mean age				0.010995 ***			
Restrictive access to early retirement							
Early retirement * some health limitations					0.121 ***		
Early retirement * high health limitations					0.171 ***		
Early retirement * secondary education					0.062 *		
Early retirement * tertiary education					0.151 ***		
Early retirement * mean age					-0.024 ***		
Limited categorical differentiation of minimum income protection							
Categorical differentiation * some health limitations						0.011	
Categorical differentiation * high health limitations						0.039	
Categorical differentiation * secondary education						-0.067	
Categorical differentiation * tertiary education						-0.133 **	
Categorical differentiation * mean age						0.006 ***	
Generosity of exceptions for mothers							
Exceptions * children in household							-0.23 ***
Exceptions * 2 adults (ref: 1)							-0.093 ***
Exceptions * 3 or more adults (ref: 1)							-0.051
Exceptions * children * 2 adults							0.135 **
Exceptions * children * 3 adults							0.191 **
Constant	-4.909 ***	-4.961 ***	-4.718 ***	-4.991 ***	-3.494 ***	-5.077 ***	-4.862 ***
Pseudo-R^2	0.256	0.257	0.257	0.257	0.262	0.256	0.256
Log-Likelihood	-45783.8	-45676.72	-45707.15	-45671.88	-45386.76	-45745.28	-45748.16

*N= 122599 individuals in 20 cuntries (country-Dummy variables included in models), *** p<0.001, ** p<0.01, * p<0.05, " p<0.1*
Data Source: EU-SILC 2014 (Wave 2011), own calculations based on EuMin, CSB MIPI, CESifo and national legislation.

The duration of couples' nonemployment in the United Kingdom and Germany:

Household composition, individual resources and social policy

Abstract

The study focuses on the duration of couples' nonemployment spells in the United Kingdom and Germany from the early 1990s until 2008/2009. The paper analyses the influence of household composition and individual labour market resources on re-employment using the German Socio-Economic Panel and the British Household Panel Survey. Case selection is based on the observation that polarisation between work-poor and work-rich households has increased in both countries in recent decades. Furthermore, both countries implemented comparable reforms of unemployment benefits that lowered benefit levels and intensified means testing for long-term unemployed persons. Stricter means tests have been associated with a diminished labour market attachment of prime-age men and lower work incentives among their household members. The descriptive analysis confirms a rising polarisation between couples until the mid-2000s. After 2005, the trend came to a halt in the UK but accelerated in Germany. The duration analysis reveals that nonemployment spells have become longer over the studied time period in both countries. Discrete-time event history models suggest that this development is related to changes in the composition of workless couples' households.

1. Introduction

While most long-term studies on labour market participation model transitions at the individual level, the present paper focuses on the household. This level of analysis can provide new insights into inequalities related to the labour market, the influence of national social policy and the nature of social risks in general. As Gregg et al. (2010) demonstrate, rising individual employment does not necessarily translate to more households with at least one person in work. On the contrary, nonemployment rates at the household level increased between 1977 and 2005 in many countries (including Great Britain and Germany) despite falling individual worklessness. This polarisation of the working-age population into multi-earner and non-earner households can also be seen as a polarisation of social risks in society. Individual disadvantages, such as poor education or health, can be cushioned within the household context or accumulate and heighten the risk of household nonemployment, which, in turn, is related to a higher chance of poverty and social exclusion (de Graaf-Zijl and Nolan 2011). Gaining knowledge about the mechanisms that influence households' (non-)employment transitions is therefore highly relevant to the study of social inequality.

This study focuses on cases for which an accumulation of social risks has already resulted in an entire household's being out of employment. More specifically, the duration of household nonemployment is analysed in order to answer two main research questions: 1) How does the composition of households influence the chances of one or more members to re-enter the labour market? and 2) How can external factors (namely social policy) affect the duration of household nonemployment? The paper applies event history methods for time-discrete spell data derived from the German Socio-Economic Panel (SOEP) and the British Household Panel Survey (BHPS). Descriptive analyses suggest an increase in nonemployment spells and their duration over time. While these increases partly coincide with social policy reforms, their influence seems to be moderate and indirect. Household composition in terms of care needs and individual employability are the main explanatory factors at the household level. Women's resources can be detected as a central factor that helps some households exit joint nonemployment more quickly than others. This effect seems to be slightly more pronounced in the UK.

The paper is structured as follows: First, theoretical considerations and empirical evidence on the interlinked processes that influence household (non-)employment are discussed, followed by a description of the social policy background of Germany and the UK. Subsequently, the data sources, analytical strategy and expected findings are laid out before descriptive and analytical results are presented. The paper concludes with a summary of the findings and a discussion of the further research agenda.

2. Nonemployment and the household level

According to Ranci (2010), "The most appropriate scale of observation at which to reconstruct social vulnerability seems to be the household" as it is "the basic unit for collecting and distributing resources and converting them into well-being" (p. 19). The household does so via three 'fundamental functionings': First, "the acquisition and use of resources necessary for the material survival of household members", second, "the management of major life events (…) that preserves the material survival of household members" and third, "the provision of social care for dependent members (…)" (ibid). In other words, the household can be identified as a merging point at which social risks and opportunities come together. The household structure in terms of the socio-economic status of its members and their financial and care-related needs determines if risk factors result in social vulnerability or if they can be compensated, e.g. by the presence of a caregiver in the case of long-term sickness, by a second earner in the case of job loss, or via an entitlement to social benefits. The latter may be targeted at the household as a whole or at individual members. In either case, benefit transfers influence the situation of all household members. Such mechanisms are strongly related to differences in individuals' life course chances, which translate into broader inequality patterns at the macro level (Esping-Andersen 2007).

The goal of this study is to better understand the household's role in interconnecting micro- and macro-level influences by investigating the effects of individual, structural and institutional risk factors on the nature of social vulnerability. Situations of household nonemployment are defined here as cases in which individuals are unable to compensate for the emergence of one or more social risk factors within the household context and thus find themselves in a situation of vulnerability as defined, e.g., by Ranci (2010).

Two factors are of special interest to the study: First, the dynamics between household members need special attention and should be treated separately from other aspects of household composition and personal characteristics that are known to influence individual nonemployment. For instance, the presence of children may increase the risk and duration of household nonemployment, and studies on unemployment have found the individual labour market status to be correlated with own resources, such as education, health, and previous work experiences. However, the literature also points to a correlation between partners' employment statuses (Gangl 2006; Härkönen 2011), which may have different but not mutually exclusive causes. Couples have, for example, become increasingly more similar in terms of age and education (Esping-Andersen 2007). This marital homogamy can lead to a correlation between partners' chances in the labour market (Ultee et al. 1988). A causal mechanism that could reinforce this correlation within households is the so-called 'discouraged worker effect': As household members search for work within the same regional labour markets, one member's joblessness – particularly when it isn't overcome easily – might discourage other, non-active household members from searching for work themselves. The contrary scenario is called the added worker effect: As one member of a household loses his or her job, others are encouraged to take up work in his or her place or to increase working hours if already employed (Harkness and Evans 2011).

The second focus of the study lies on institutional influences on household nonemployment. As a provider of income that substitutes or supplements private earnings, the welfare state needs special attention as it may help or hinder households in overcoming joblessness. Tax regulations and social benefits affect the overall income that households can obtain through work and transfers and are therefore relevant for employment decisions within households. Benefits that are paid to the individual regardless of his or her household context are associated with lower disincentive effects than those that are means-tested at the household level. In the latter case, an increase in any member's income may lower the benefit paid, leading to a higher marginal tax rate for those living with a benefit recipient (Härkönen 2011). This is especially true for households with higher financial needs, i.e. households with children or other dependent members. Policy instruments that could counteract such disincentives are those targeted at the lower wage spectrum of the labour market, e.g. minimum wages and tax reductions for low-paid workers (Eichhorst et al. 2008).

In order to reduce the complexity of the subject and to exclude those cases for which individual- and household nonemployment are the same (single households and lone-parent households), this paper focuses on couple households[1]. In all countries studied by Gregg et al. (2010) (with the exception of Great Britain), most growth in employment polarisation could be found within couple households. This indicates a gradual split of this group into dual-earner and non-earner couples. In Great Britain, however, one-adult households seemed to grow more unequal over time than did couples.

McGinnity (2002) compared the employment behaviour of the wives of unemployed men in the UK and Germany and found that in the UK, they were less likely to move to employment than were women with employed partners, and if they did, they mainly moved to part-time employment. In Germany, on the other hand, the probability of women to take up employment increased if their husbands were out of employment, and they were more likely to enter full-time employment than were the wives of employed partners. The effects were stronger the longer the husbands' unemployment spells were. Moreover, in the UK, the transition hazard of women was influenced negatively by having young children, while no such effect could be found in the German data. Thus, evidence for the discouraged worker effect was found for Britain, whereas for Germany, there was more evidence of an added worker effect. This contrast is ascribed to differences in the countries' unemployment protection systems as Britain relies more strongly on means-tested benefits than Germany. However, these results were generated with data for the 1990s, and it is very likely that the picture has changed by now. The German system of unemployment benefits was reformed in 2005 and today resembles the British system much more than it did in the 1990s (see below). In the UK, a minimum wage was introduced in 1998, and in-work benefits in the form of tax-credits for low-wage earners have been extended considerably. In his studies on dual joblessness in Europe, Härkönen (2007; 2011) observed that exits from household worklessness were more likely due to a transition to the male breadwinner model in Germany compared with the UK, although in the latter case, transition rates out of dual joblessness were smaller, regardless of which partner re-entered employment. However,

[1] The study leaves same-sex couples out of consideration due mainly to a lack of data: The number of spells for this group was extremely low in both datasets, partly because only 1 spell per couple was investigated.

this finding stems from ECHP data and therefore also describes the situation before most of the aforementioned social policy reforms.

3. Benefit reforms in Germany and the United Kingdom

The United Kingdom and Germany were selected for this study because reforms have lowered benefit levels and intensified means testing for long-term unemployed persons in both countries. The UK's Jobseeker's Allowance (JSA) was introduced in 1996 and consists of two subtypes of benefits: The contribution-based JSA replaced the former Unemployment Benefit (UB), while the non-contributory JSA was installed in place of Income Support (IS) for the unemployed. The change to the JSA system implied cuts both in terms of benefit levels and the payment period of contributory benefits: A lower benefit rate was introduced for persons under 25, and the maximum payment duration was reduced from 312 to 182 days. As was the case before 1996, non-contributory benefits that have the same basic benefit rate can be claimed after the contribution-based rights expire. Compared with the IS, however, the non-contributory JSA applies stricter rules of means testing as a claimant's partner's earnings affect the benefit amount more strongly than before. For recipients of both types of JSA, job searching requirements were altered regarding the hours of work for which a claimant must be available and the frequency of job applications. Before 1996, setting up a 'back to work plan' was a voluntary option for UB recipients. In the JSA scheme, signing a Jobseeker's Agreement is a precondition for receiving any benefit (Department for Work and Pensions 2005; Finn and Schulte 2008).

A very similar reform was carried out almost a decade later in Germany. Until 2004, unemployed persons with expired insurance claims could apply for the *Arbeitslosenhilfe* (ALH), a tax-financed, less generous assistance benefit. The benefit levels of unemployment insurance and assistance were wage-related and ALH was not limited in terms of entitlement duration as long as the conditions of a rather mild means test were met. Jobless persons without insurance rights depended on the general social assistance scheme (*Sozialhilfe*), which was the main minimum income protection programme in Germany at that time. In 2005, the benefit system was fundamentally restructured during the so-called Hartz IV reform. The maximum entitlement period for the insurance benefit was reduced, although this mainly affected individuals older than 45. For persons aged 57 or above, for example, the benefit duration was cut from 32 to 18

months (OECD 2012). More importantly, the ALH was abandoned and replaced by the *Grundsicherung für Arbeitssuchende*, or *Arbeitslosengeld II* (ALG II). There are two main differences between the ALG II and the ALH. First, ALG II benefit levels are equal to those of social assistance and are thus unrelated to former earnings. Second, the eligibility for benefits is tested against the income and assets of all household members, including cohabitant children. Hartz IV also affected most social assistance recipients as those able to work were also incorporated into the new scheme. The reform therefore led to a division of the unemployed into two groups: those covered by contributory benefits and those on minimum income protection. As a result, the German system of unemployment benefits became more similar to the British one, although contributory benefits are still wage-related and available to the insured for a longer time than in the UK (Bahle et al. 2011).

Clasen et al. (2006) found that in the British case, the Jobseekers' Allowance Act of 1996 lowered the labour market attachment of prime-age men. Similar findings were presented by Little (2007): The likelihood of unemployed men to move to inactivity doubled between 1995 and 2003 and has only slowly declined since then. Clasen and his colleagues predicted a similar effect for the new ALG II in Germany. Moreover, they expected the stricter means test of the new scheme to lower work incentives not only for the unemployed but also for their household members, leading to an increase in the number of nonemployed households and a rising persistency of household joblessness. In line with this argument, Koulovatianos et al. (2007) were able to show that negative incentives to take up work exist for all types of households on ALG II but are the highest for multi-person households, particularly for couples with children despite the fact that they are relatively worse off compared to singles: The benefit levels for lone and coupled parents do not meet the higher needs that come with additional household members.

Other scholars, however, predicted higher work incentives and shorter unemployment spells as a consequence of the reform. A simulation study by Schmitz and Steiner (2007) concluded that the reform might have reduced the unemployment duration of older men and women as the shortened insurance benefit entitlements could lead to a re-entry into the labour market when the benefit right expires. The authors found no effect of the changing benefit rates of the ALG II compared with the ALH, but they note that this might be because they were not able to model the means test in their data.

For recipients who had relatively high wages prior to their job loss, the incentives for finding employment as the date of insurance right expiration approached were heightened by the reform because the benefits to follow were no longer wage-related. Claimants that do not re-enter employment after their insurance rights expire can no longer draw on follow-up benefits if their partner's income is too high to claim ALG II (Koch et al. 2009). Fehr and Vobruba (2011) find significant differences in the socio-economic structure of the recipients of the former ALH and ALG II, which is – apart from the tighter means test – also due to the inclusion of former beneficiaries of social assistance. In their ex-post assessment of the ALG II introduction, Fehr and Vobruba tested whether the policy change had an effect on the duration of unemployment spells. Although the reform was meant to increase the incentives of the long-term unemployed to seek work, the authors could not find a reduction in benefit duration compared with the time prior to the reform. On the contrary, there was a decrease in the transition rates of unemployment benefit recipients to any other possible (non-) employment status. No significant change was found if only the transitions to employment were observed, thereby leaving other events (e.g. entering education, retirement, or maternity) out of consideration. Such developments at the individual level might also have an effect on household joblessness. Additionally, the aforementioned change in the socio-economic structure of the recipient groups may have resulted in a population of beneficiaries whose household-level clustering of social disadvantages is stronger than it was for beneficiaries before 2005.

In the UK, a broadening of the scope of in-work benefits may have had an impact on employment behaviour in a way that counteracted the negative effects of the means-tested benefits. In 1999, the Family Credit (FC), a regular cash benefit that had been paid out to the carer in a household, was replaced by the Working Families Tax Credit (WFTC). The threshold under which parents' net incomes had to fall to claim this tax reduction was significantly higher than the income threshold for the FC. In 2003, the WFTC was replaced by two separate programmes: The Child Tax Credit (CTC) for working families and the Working Tax Credit (WTC), which is available for all low-wage earners with and without children (Finn and Schulte 2008; Harkness and Evans 2011). In Germany, there is no policy change that strictly compares with those of the British tax credits. In 1996, however, the base amount of personal income that was

exempt from taxation was raised significantly. This reform is incorporated in the analysis below.

4. Data and method

The empirical analyses in this paper are based on two long-term panel datasets from Germany and the UK. The German SOEP is an ongoing study conducted by the German Institute for Economic Research (DIW) in Berlin. It began in 1984 and provides information on 20,000 individuals in 11,000 households up to the year 2010. The BHPS was launched in 1991 by the Institute of Social & Economic Research (ISER) at the University of Essex and covers 10,300 persons in 5,500 households throughout the UK. Since 2010, the BHPS has been integrated within the new panel study Understanding Society. In the present study, only data up to 2009 are used.[2] For the purpose of this study, the monthly employment calendars of SOEP and BHPS respondents are merged with data collected on a yearly basis, such as individual health and the number of dependent children living in a household. In order to construct a variable on household nonemployment, an indicator for individual employment status must first be created, which is done on a month-by-month basis. In the case of overlapping labour market states, the status is defined on the basis of a clear hierarchy, which, for example, gives priority to employment over maternity breaks over retraining. Based on this variable, a dummy is created that indicates whether respondents are employed or nonemployed. With the help of spouse identifiers derived from the individual-level datasets, nonemployment spells for couple households are created. Subsequently, the dataset is collapsed to the couple level while maintaining information on household- and individual traits that are assumed to be relevant influences on household nonemployment. One set of household-level indicators relates to marital homogamy measured by the difference in partners' age and education. Another two variables assess the financial and time requirements within the household via the presence and age of children and the presence of persons in need of long-term care. The measurements of the labour market-relevant resources of partners are their health, age, education and work experience. Actual health is approximated using individually perceived health status, coded as a dummy variable that pools together good and fair/satisfying health in one category and bad/very bad health in the other. Age is grouped into three categories

[2] For more information, see http://www.diw.de/en/diw_02.c.221178.en/about_soep.html and https://www.iser.essex.ac.uk/bhps.

(younger than 30, between 30 and 49, and 50 or older), which that roughly reflect the phases in life most relevant for labour market entry, family obligations and (early) labour market exit, respectively. Education, which was originally measured according to ISCED 1997 (cp. http://www.uis.unesco.org/Education/ ISCEDMappings), is aggregated to low, middle and high education. Work experience is measured in years of full- or part-time employment prior to the spell. A summary of the household- and individual-level variables is given in Appendices A3 and A4.

Two additional indicators are included that represent household-external influences on employment. One is a categorical variable that indicates whether a nonemployment spell begins before or after a social policy reform. For Germany, this is an indicator with three possible values: 1 for spells beginning in the years before 1997 (when the basic tax exemption for private earnings was significantly raised), 2 for spells beginning between 1997 and the introduction of the ALG II in 2005, and 3 for the years 2005 to 2009 (when both means testing and activation were intensified compared with the preceding periods). For Britain, the distinction of spells according to their starting point takes on four values: 1 for those that began before the introduction of the JSA in 1996, 2 for spells beginning between 1996 and 1999 (while the old FC scheme was still in place), 3 for the period between 1999 and 2003 (when the WFTC applied), and finally, 4 for spells that began after the introduction of the more generous WTC in 2003. In addition to these indicators of policy periods, regional unemployment rates[3] account for the influence of labour market demand since periods of economic growth followed the reforms in both countries and regional differences in macro-economic performance are an important factor for the risk of unemployment and social exclusion (Green 1997).

The empirical assessment of household worklessness is performed in three steps: First, the development of national nonemployment rates for individuals and couple households is explored using the non-aggregated full dataset, including all possible spell months for persons between 25 and 65.[4] This is done to provide an overview of the relevance of nonemployment from a macro-sociological perspective and to check the findings of other authors, namely Gregg et al. (2010), which is performed by calculating

[3] On Nuts Level 1, taken from the Eurostat database (http://epp.eurostat.ec.europa.eu).

[4] For couples, those with at least one partner between 25 and 65 were selected. This age restriction was introduced to concentrate on the stages in life after labour market entry and before pension age.

a polarisation indicator following the recommendations of Gregg and Wadsworth (2001). The indicator measures inequality in the distribution of work and worklessness among couples by contrasting the empirical nonemployment rate of couples with the counterfactual scenario of equal nonemployment chances for every individual in every couple. In this scenario, the probability of nonemplyoment for a one-person household would correspond to the aggregate individual nonemployment rate. The probability of a couple's being nonemployed is defined as the square of this value. Aggregating these rates to the total population of couples gives the counterfactual nonemployment rate, which is then subtracted from the actual rate for couples in order to obtain the final polarisation measure. The resulting value indicates the level of polarisation between couples. A value close to zero indicates equality between couples, while a negative result points to more equality than expected due to a high compensation of social risks in couples. Positive results, however, speak for a concentration of labour market risks within some couples, while others experience extremely low risks of being jobless.

The following analytical stages examine the duration of household worklessness using methods of survival analysis. For this purpose, only one nonemployment spell per couple is evaluated, i.e. the first spell that begins within the observation period is selected, excluding those cases for which both partners are in education before they first enter the labour market and those for which both are above retirement age. The final dataset in couple-period format in Germany has 80,593 cases and represents spell months for 3,088 couples between 1991 and 2009. 1,598 of these spells end with an exit out of household nonemployment. The UK dataset is considerably smaller, containing only 26,523 observations for 857 couples between 1990 and 2007. The number of non-censored spells is 330.

In order to gain a first impression of these data, life tables for the selected household spells are investigated to find evidence of the influence of household composition and the changes in social policy. After this general descriptive assessment, a multivariate regression model is fitted to the data to test the relevance of each influencing factor in context. The exit from household worklessness is analysed using a complementary log-log model, which can be defined as the discrete-time equivalent of the proportional hazards model for event histories measured in continuous time (Singer and Willet 2003). Time dependence is specified by including the logarithm of spell duration and

the nesting of observations within the couples is taken account of by estimating robust standard errors.

The model fitted to the data is described by the equation

$$\log [-\log(1-h(t,X))] = \alpha \log(t) + \beta' X$$

where h stands for the hazard of leaving a spell. This hazard is dependent on time t (i.e. spell duration in months) and on a set of independent variables X. The parameter α describes the shape of the baseline hazard log(t) (i.e. time dependence), while β is the vector of intercept and slope parameters related to X.

5. Expected findings

The analyses aim to capture three possible sources of influence on couples' nonemployment duration: factors originating outside of the household (i.e. social policy in the form of benefits and taxation), household composition (i.e. marital homogamy and care needs), and the individual partners' labour market-relevant resources (i.e. health, age, education and work experience).

5.1 Household-external factors

Given the results of the previous research discussed in Section 3, it is unlikely that the benefit reforms in the two countries had a favourable impact on jobless couples. On the contrary, I expect to find an increase in the share and duration of dual nonemployment. Due to the change in eligibility conditions, the composition of such households might have changed, as well. For Germany, ex-ante studies (see above) have postulated negative impacts on the prime-age workforce and larger households, which would increase the number of families in nonemployment. Increased activation measures and shorter insurance coverage for older persons might additionally lead to a decrease in the number of older, childless couples and to a higher share of families among the nonemployed. In the UK, the JSA's disincentive effects should show some effect in the data, especially for couples with children. The later tax reforms are expected to have increased the number of couples in work and to have shortened spell durations, but the disincentives for families to take up work may nevertheless remain high. Still, the wider scope of the tax credits could have weakened discouraged-worker effects to some extent. Germany, in contrast, should have experienced a weakening of added-worker

effects within households as a consequence of the policy changes. Couples in Germany should therefore experience longer nonemployment spells.

5.2 Household composition

Regarding the mechanisms at the household level itself, educational and age-related homogamy should have a negative impact on couples' way out of employment as both partners might be equally exposed to a number of social risks, e.g. bad health or weak demand in the labour market for certain kinds of jobs that both partners would qualify for. The presence of children and persons in need of care can have an effect in two directions: The higher financial needs might increase couples' efforts to overcome nonemployment more quickly; however, the higher time needs for care work might lead to a gendered division of labour that – in the long run – decreases the woman's chances of re-entering the labour market and gaining an income that meets the household's needs (Becker 1985) or that pushes the household above the benefit level. Care needs within the household could therefore also lengthen the duration of dual worklessness.

5.3 Individual resources

Partners' individual characteristics influence their own employability and thus the length of dual nonemployment. Young age, good health, high education and work experience are generally expected to enhance the chances of leaving worklessness. Nevertheless, these factors might impact men and women in their household contexts differently depending on the structure of the nonemployed population and the employment patterns within society in general. In Germany, for example, the male breadwinner model is still more common than in the UK (Härkönen 2007). Women's education might therefore have a weaker effect than in the UK as the tendency to exit employment may be higher for partnered women in all educational groups.

6. Results

Figure 1 plots the development of the nonemployment rates for individuals and couples living in the same household for Germany and the UK and the polarisation indicator described above. Both graphs are in line with the findings of Gregg, Scutella and Wadsworth (2010). For the 1980s and early 1990s, the authors found that household nonemployment in the UK had increased significantly, whereas individual worklessness

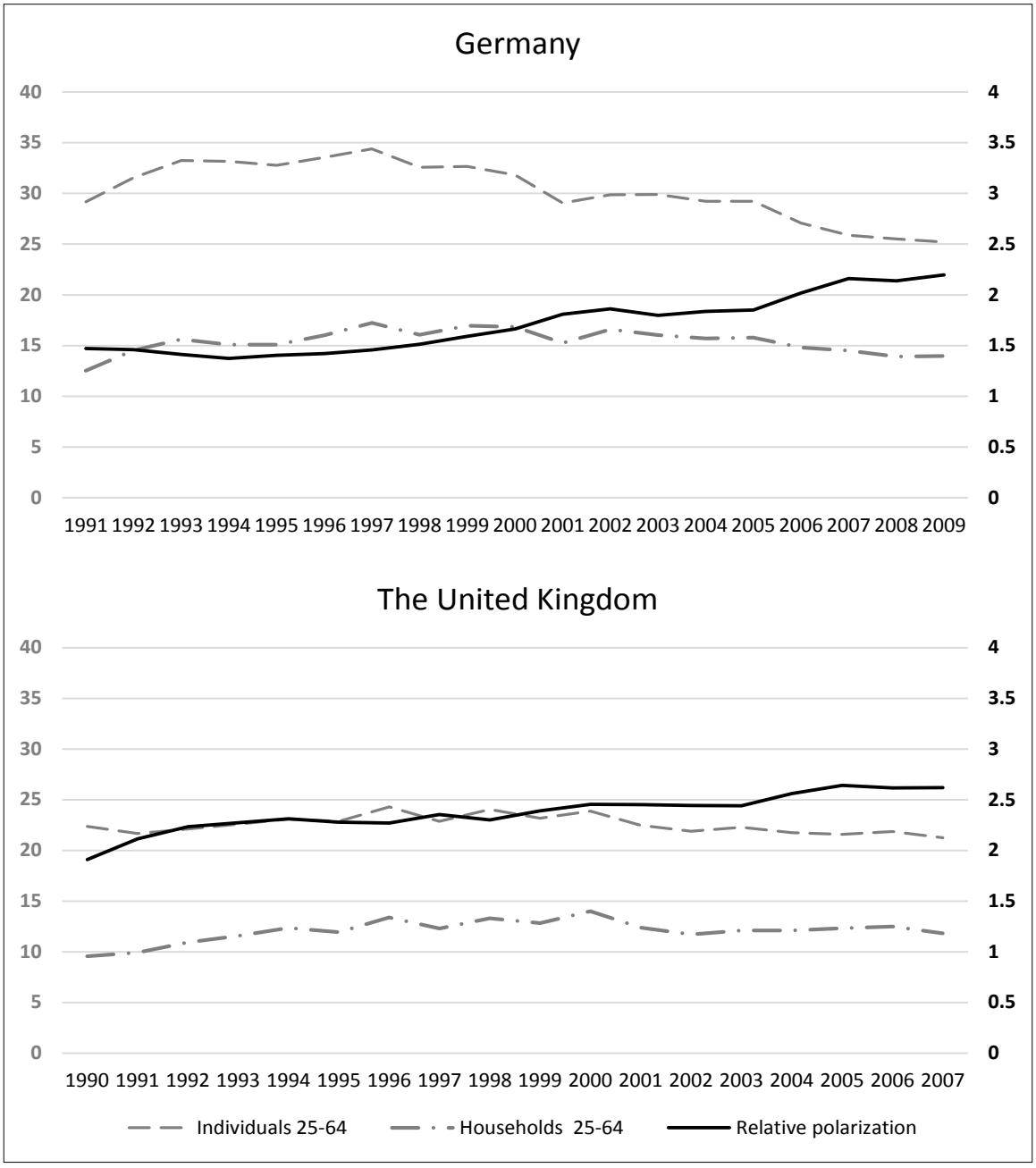
was more stable. From the late 1990s up to 2005, individual and household developments became more similar and the growth of polarisation stagnated. Germany was marked by low polarisation throughout the 1980s and 1990s, with rather high individual nonemployment and low household nonemployment rates. Only towards the end of the observation period did polarisation begin to grow. The data in Figure 1 seem to reproduce and update these findings while focussing on couple households. The British case reveals lower nonemployment rates for individuals than in Germany as well as a smaller difference between individual and household rates, resulting in a higher level of polarisation overall. Nevertheless, the growth of polarisation is smaller than in Germany, and the curves are nearly parallel. The German nonemplyoment rates are further apart at the beginning of the observation period. While individual worklessness decreased significantly after the late 1990s, couples' rates have remained more stable, which indicates that the equalizing effect of mating has diminished in recent decades. Accordingly, Germany began with a lower level of polarisation that increased more strongly than in the UK. Interestingly, some changes in the slope of the polarisation curve coincide with the dates of reforms described in Section 3. The steepest increases in polarisation can be detected between 2005 and 2007 in Germany and between 2003 and 2005 in the UK. While a rapid fall in the individual nonemployment rates coincided with a slower fall in couples' rates in Germany, the UK had a slight decrease in individual rates, while couples' rates slightly increased.

Figure 1 therefore speaks in favour of the polarisation thesis, i.e., a split of the population into persons living in fully employed and fully nonemployed households. The graph might also reflect effects of benefit and tax reforms. In Germany, the introduction of the ALG II (in combination with economic growth) seems to have led to better labour market performance in general, while the most vulnerable persons (i.e., those out of employment) cluster in certain households. In the UK, the split of tax credits into the WTC and the CTC might have had some positive effect on individual employment, but there are signs of adverse effects for certain households, as well.

Regarding the structure of households with and without work (see Appendices A1 and A2), age increased and health diminished in Germany for both groups between 1997 and 2007. The most notable change is that there were fewer low-educated persons living in nonemployed households in 1997 compared with 2007, while the share of highly skilled persons increased. Such a development is also visible in the UK data, as is a

general increase in age. Health, however, has improved over the years. There has been a notable fall in the average number of children living in nonemployed households in the UK sample. There is also a decrease in the German data, but it is more modest and stronger for employed households than for nonemployed ones. In the British case, this development might indicate that the situation of families with children seems to have improved, which may be due to the changes in tax regulations. If so, the reforms should have some visible effect on the data in nonemployment spells. Even if the development of the nonemployment rate of households hasn’t undergone any significant change of course at the aggregate level, the policy changes might still have affected the nature of household joblessness in terms of its persistence.

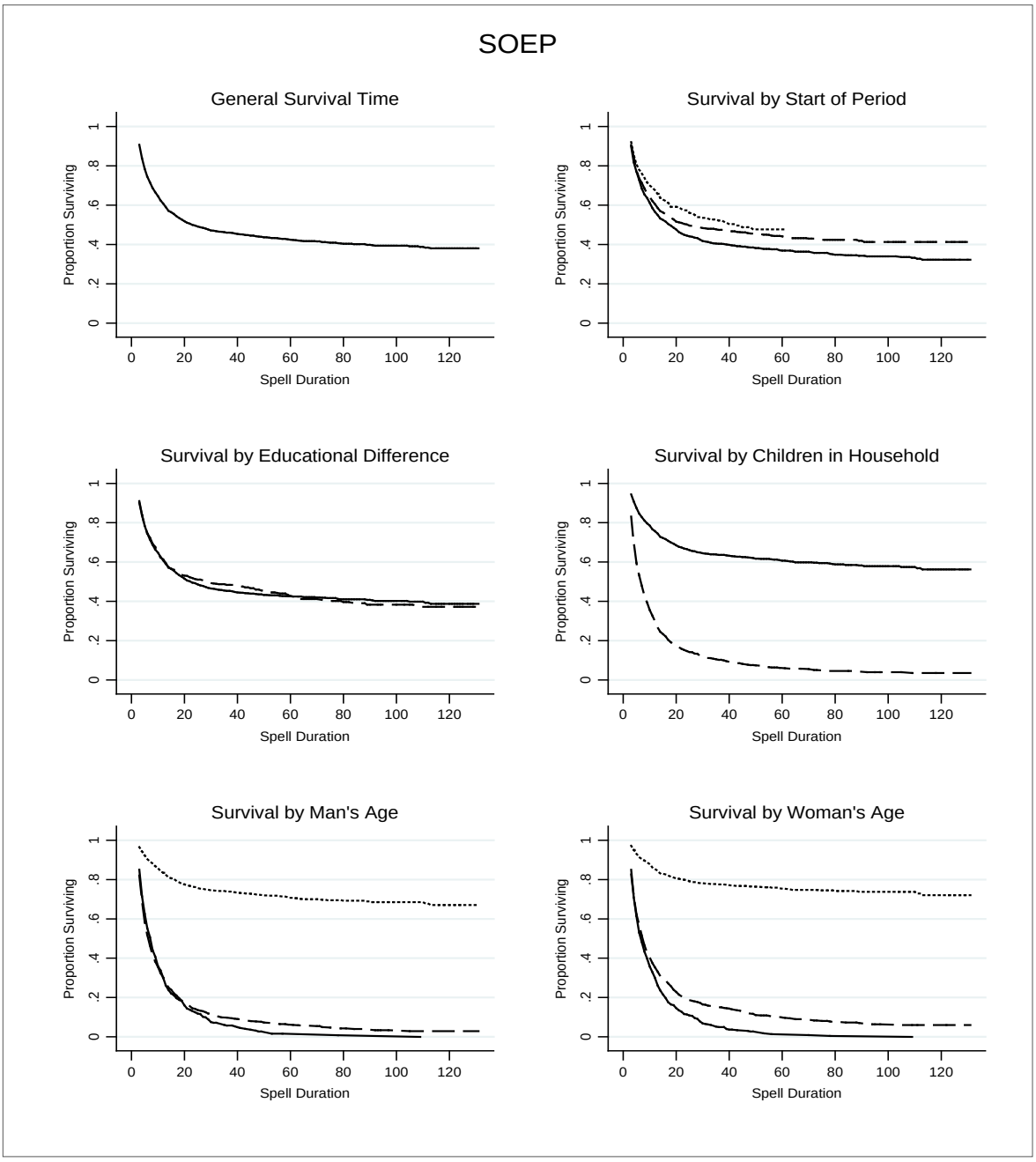
Figure 1: Nonemployment of individuals and household couples



Source: SOEP, BHPS, own calculations.

In order to detect a possible influence of policy changes on the duration of dual worklessness, the life tables of spell duration in Figures 2 and 3 differentiate for the time period when a spell began. Because the overall educational composition of the groups changed in both countries, a change in educational differences is also possible; therefore, couples with high vs. low differences are also examined separately in the charts. As the number of children has changed dramatically in the UK but not in Germany, the exit out of nonemployment is also plotted separately for households with and without dependent children. The survival functions of dual nonemployment are furthermore broken down by the age of the male and female partners. Figures 2 and 3 show that many spells end within a short time span in both countries, but there is also a considerable proportion of long-term survivors. Examining the chart's differentiations for time periods, it is clear that spells came to an end more quickly prior to the mid-1990s in both countries. The pace of overcoming nonemployment slowed down in Germany between 1997 and 2004, and even more so after 2005. In the UK, the difference between spells that began before and after 1996 is rather pronounced. Differences are not as clear between the later periods, but the chances of re-employment might have improved slightly since 1999.

Figure 2: Life tables for Germany

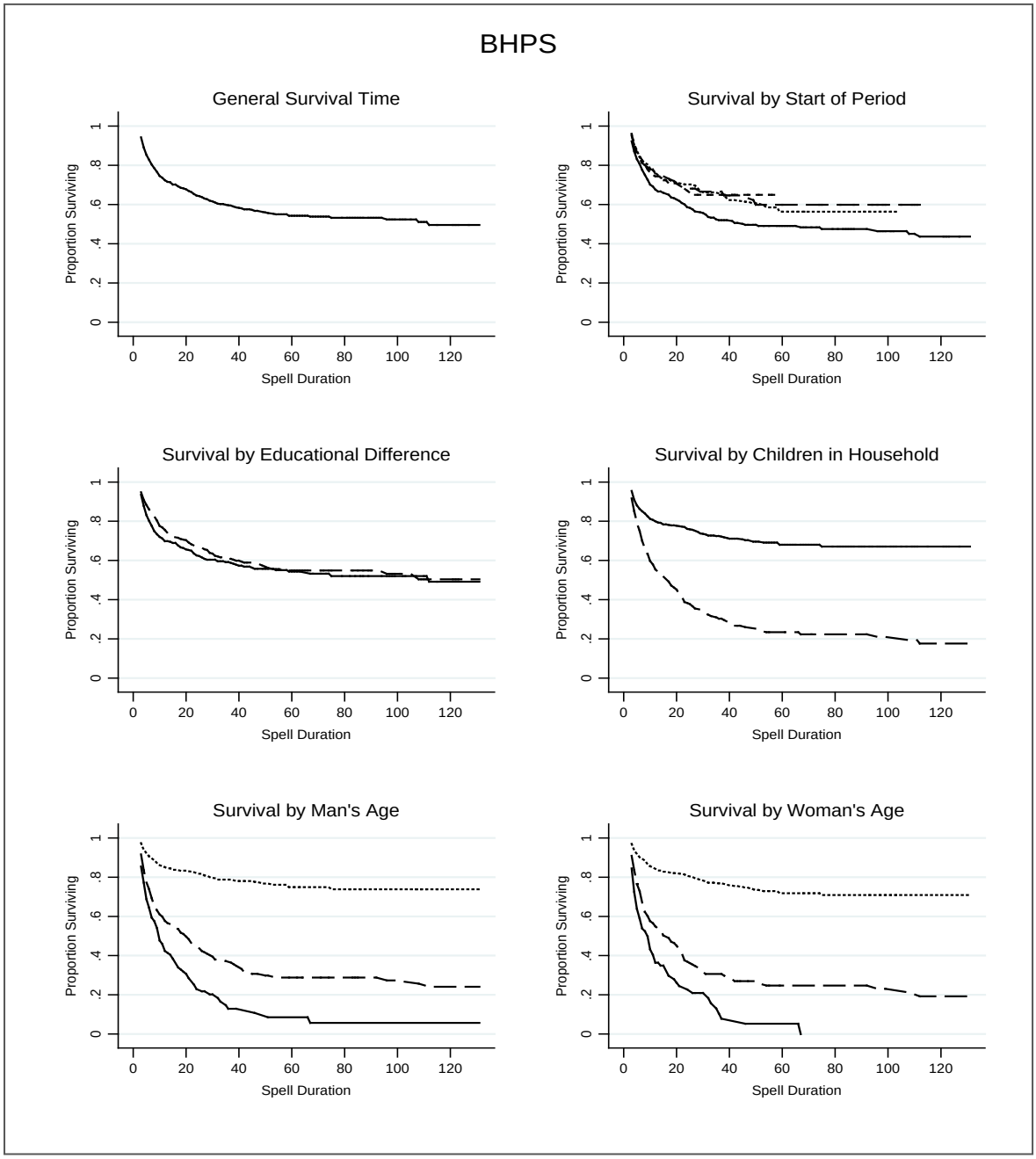


Note: spell duration in months.

Line pattern	Start of spell	Educational difference	Children in household	Age group
Solid	– 1997	Low	No	< 30
Long dash	1997 – 2004	High	Yes	30-49
Dots	2005 –			50+

Source: SOEP, own calculations

Figure 3: Life tables for the UK



Note: spell duration in months.

Line pattern	Start of spell	Educational difference	Children in household	Age group
Solid	– Sep 1996	Low	No	< 30
Long dash	Oct 1996 – Mar 1999	High	Yes	30-49
Dots	Apr 1999 – Mar 2003			50+
Short dash	Apr 2003 –			

Source: BHPS, own calculations.

The third plots in Figures 2 and 3 examine marital homogamy in terms of education. In both countries, couples who are similar to each other do not differ in their re-employment patterns from those who differ in their levels of education. Having a dependent child, in contrast, is a clear indicator for shorter nonemployment spells. Despite Härkönen's (2011) findings that children generally raise the risk of dual joblessness, parents' spells tend to be shorter in Germany and the UK, which is surprising because previous studies have suggested strong work disincentives for families in both countries (Koulovatianos et al. 2007; Finn and Schulte 2008). Although having a child may diminish both partners' chances of being able to look for a job, the higher financial needs seem to motivate couples to leave dual nonemployment quickly. Moreover, couples with children may be younger, which is correlated with better employment prospects in general. The lower two charts in Figures 2 and 3 illustrate how strong such age effects can be: For couples in which both partners are younger than 50, at least one partner re-enters employment quickly, while dual nonemployment is extremely persistent for couples with at least one partner older than 50.

The influencing factors on dual joblessness seen in Figures 2 and 3 cannot be interpreted correctly as long as their interdependence is not taken into account. How they operate within the broader household context is therefore analysed in a multivariate discrete-time proportional hazards model. The results for Germany are presented in Table 1. The baseline hazard (i.e. the coefficient of the logarithmised spell duration) is negative, indicating a diminished hazard of ending a nonemployment spell as its duration increases. Regional unemployment is negative but insignificant. This finding might, however stem from the rough nature of the measure used: Unemployment rates on the NUTS 1- level might not adequately capture the influence of local labour markets on households and their members. Although there are observable differences between policy periods in the life tables, the effect is not significant in a regression model that controls for household composition and individual resources. This may indicate that the structure of nonemployed households has indeed changed over the course of the reforms and that this is the reason for longer household spells.

Table 1: Results of complementary log-log-model, SOEP

	Hazard Ratio	Robust Standard Errors
Regional unemployment (in % of population 25-64)	0.996	0.005
Start of spell (reference: 1991-1996):		
1997-2004	0.975	0.057
2005-	1.011	0.074
Age difference (in years)	1.003	0.008
Educational difference (high)	1.056	0.067
Age of youngest child (reference: no children):		
0-2 years	1.217 ***	0.089
3-5 years	1.349 ***	0.129
6-10 years	1.185	0.131
11-15 years	1.200	0.142
Household member in need of long-term care	0.704 *	0.129
Health status of man (good)	1.155 *	0.088
Health status of woman (good)	1.155 *	0.086
Man's age (reference: < 30):		
30-49	1.003	0.084
50+	0.426 ****	0.075
Woman's age (reference: < 30):		
30-49	0.883	0.071
50+	0.201 ****	0.034
Man's level of education (reference: low):		
Medium	1.259 ***	0.107
High	1.278 **	0.129
Woman's level of education (reference: low):		
Medium	1.270 ***	0.089
High	1.614 ****	0.144
Man's work experience (in years)	1.001	0.005
Woman's work experience (in years)	1.007 *	0.004
Spell duration (logarithm)	0.590 ****	0.013
Constant	0.117 ****	0.018

Observations: 73,896

Non-zero outcomes: 1,400

Prob > chi^2 = 0.000

*p<0.1, **p<0.05, ***p<0.01, ****p<0.001

Source: SOEP, own calculations

Table 2: Results of complementary log-log-model, BHPS

	Hazard Ratio	Robust Standard Errors
Regional unemployment (in % of population 25-64)	1.069	0.052
Start of spell (reference: Jan 1991 - Sep 1996):		
Oct 1996 - Mar 1999	0.744	0.178
Apr 1999 - Mar 2003	1.155	0.249
Apr 2003 -	1.094	0.282
Age difference (in years)	1.007	0.014
Educational difference (high)	0.967	0.119
Age of youngest child (reference: no children):		
0-2 years	1.033	0.212
3-5 years	1.007	0.232
6-10 years	1.124	0.275
11-15 years	1.212	0.324
Household member in need of long-term care	0.719	0.139
Health status of man (good)	1.269	0.266
Health status of woman (good)	1.704**	0.388
Man's age (reference: < 30):		
30-49	0.898	0.177
50+	0.383**	0.149
Woman's age (reference: < 30):		
30-49	0.793	0.144
50+	0.476*	0.180
Man's level of education (reference: low):		
Medium	1.003	0.143
High	1.168	0.201
Woman's level of education (reference: low):		
Medium	1.276	0.190
High	1.560**	0.261
Man's work experience (in years)	0.999	0.007
Woman's work experience (in years)	0.988**	0.006
Spell duration (logarithm)	0.544****	0.029
Constant	0.062****	0.032

Observations: 22,475

Non-zero outcomes: 271

Prob > chi^2 = 0.000

*p<0.1, **p<0.05, ***p<0.01, ****p<0.001

Source: BHPS, own calculations

As could be expected from Figure 2, educational homogamy is not a predictor of spell duration, nor is the age difference between partners. Also in line with the descriptive findings, the model suggests that couples with young children are more likely to leave nonemployment than are childless couples. The hazard of leaving the spell is 1.21 times higher for parents whose youngest child is below the age of 3 and 1.35 times higher if the youngest child is between 3 and 5. No effect can be found for couples whose children are 6 or more years old. Despite the fact that higher care needs can interfere with at least one partner's job search, parents of small children seem to exit nonemployment faster. In contrast, having a household member in need of long-term care decreases the prospects of ending nonemployment, although the model's coefficient is only mildly significant at the 10% level. Turning to the individual characteristics of partners, good health shows positive effects at the 10% significance level. In line with the life tables, the likelihood of ending dual joblessness is significantly diminished if either partner is older than 50. Higher education enhances the prospects of one partner's re-entering employment. Here, female education shows a stronger and more significant influence. Accordingly, the labour market experience of the woman shows some effect, while the experience of the man does not.

As in Germany, the model for the UK suggests negative duration dependence, and neither regional unemployment (see Table 2), the coefficients for the time period when a spell began, nor the indicators of marital homogamy turn out to be significant. In contrast to the SOEP model, the British model does not show any effects of children in the household on leaving dual nonemployment. The need for long-term care, however, is a factor that shows a negative effect at the 10% significance level, as in Germany. One interesting finding that manifests in the results is that female labour market resources turn out to be more important than men's. Women's health and tertiary education increase couples' likelihood of ending dual worklessness by 70.3% and 56.0%, respectively. A puzzling result is that female labour market experience seems to work in the opposite way: All other things being equal, every year of activity prior to the spell decreases a couple's probability of exiting nonemployment by 1.2%. Stronger negative effects on the likelihood of spell exit can be found for the age of both partners: Compared with the youngest age group, the risk of leaving dual nonemployment is 61.7% lower if the man's age is 50 or higher and 57.4% lower if the woman belongs to this age group.

7. Discussion

In Sections 1 and 2 of this paper, household nonemployment was defined as a situation resulting from the accumulation of social risks within the household context. How easily it is overcome depends on factors originating from within the household (i.e. its structure and the characteristics of its members) and external influences (e.g. labour demand and social benefits offered by the state). The household level can be defined as a merging point for these intersecting influences. In order to reduce the complexity of this issue, this paper concentrates on couples and leaves aside one-person and single-parent households. The following sections discuss the results regarding household-external influences on nonemployment duration, household composition and individual resources.

7.1 Household-external factors

One assumption of this study is that reforms of the tax-benefit system in Germany and the UK may have influenced the share of nonemployed couples in the population. The intensifying of household-level means testing is often associated with a weakening of work incentives for all members of a household, while the extension of tax credits should have a stimulating influence on job take-up. The reforms might also have influenced the composition of nonemployed households in terms of their socio-economic characteristics as eligibility conditions for unemployment benefits changed while new types of benefits were created and others were abandoned or merged.

The descriptive analysis has confirmed increases in the polarisation of (non-)employment in the populations of couples studied. Furthermore, there are signs of an impact of tax and benefit reforms. While individual worklessness decreased after 2005 in Germany and after 2003 in the UK, couples' joint nonemployment did not react very strongly in Germany and even increased slightly in the UK. At the same time, there was an increased rise in polarisation. Furthermore, the life tables presented in this paper reveal that dual nonemployment has become more persistent over time. However, the policy periods had no significant effects in the multivariate models when individual and household characteristics were controlled for, which suggests that the increases in spell duration are related to changes in the socio-economic structure of nonemployed households.

Among the nonemployed couples in both countries, there were fewer low-educated and more highly educated persons in 2007 compared with 1997. Other differences between both time points can be observed for employed and nonemployed couples alike: In Germany, age increased and health decreased in general, while in the UK, age also increased, while health generally improved. These changes may mirror broad developments in the structure of the panel population. Nevertheless, the country-specific findings on the number of children are in line with the assumptions regarding the influence of tax/benefit policies on family households: While the number of children per couple decreased within the whole sample in Germany, the decrease was stronger for employed couples and weaker for nonemployed ones. This difference may have been caused by a weakening of work incentives within larger households as predicted by Clasen et al 2006. In the UK, the number of children per nonemployed couple was dramatically lower in 2007 compared with 1997, while the decrease in children per employed couple was much more moderate. Previous literature suggests that tax credits reduced work disincentives for low-wage earners and benefit receivers, which were especially severe for families. The survival analyses presented here do not suggest such an influence on the duration of couples' nonemployment. A combined interpretation of the descriptive and analytical findings could therefore be that these policies decreased families' risk of fully exiting employment, while there was no effect on incentives once the situation of dual worklessness occurred.

7.2 Household composition

In Sections 2 and 5, care needs were discussed along with marital homogamy as factors of household composition that are likely to influence couples' employment decisions, irrespective of how social transfers are institutionalised. Two conflicting hypotheses were discussed for households with children or members in need of long-term care: On the one hand, the higher financial needs should motivate individuals to re-enter employment quickly after losing a job; on the other hand, the need for medical or child care may limit the employment possibilities of one or both partners in both the short and long term. In both countries, nonemployment spells of couples with children are remarkably shorter than those of childless couples. For Germany, this finding was confirmed in the multivariate regression for couples whose children were younger than 6. The need for long-term care had the opposite effect and diminished the likelihood of

ending dual joblessness. In the UK model, the coefficients for this set of variables point in the same direction but are not significant.

Regarding marital homogamy, similarity within couples was assumed to diminish their chances of ending nonemployment as both partners tend to search for work in the same spheres of the labour market. However, homogamy in terms of age or education showed no effect in either country in the descriptives or in the regressions. Instead of assortative mating as such, the specific combination of partners' characteristics seems to influence the dynamics of household nonemployment.

7.3 Individual resources

Individuals' levels of age and education, as well as their work experience and health, are strong predictors of couples' nonemployment duration. A couple has more difficulties ending dual joblessness when one partner is older than 50. The man's age seems to have a stronger impact on spell duration than does the age of the woman. In contrast, the favourable effects of higher education are stronger for female education. In the UK model, only the woman's education is significant, not the man's. The same is true for health, while in Germany, the influence of both partners' health status is equally strong. In both countries, work experience turns out to be significant only for the woman. While the coefficient is in line with expectations in Germany – the more experience, the shorter the spell – the coefficient for Britain points in the opposite direction. A country difference in the constellation of partners' work experience is notable in this respect and becomes apparent when looking at Appendices A3 and A4. In the BHPS sample, the women have been employed for a longer period of time on average than the men. In the SOEP data, the opposite is true. The couples observed in the BHPS therefore have a fundamentally different employment (and nonemployment) history than do those in the SOEP, and there seem to be more female breadwinner couples in the UK sample compared with the German data.

8. Conclusion

This paper has assessed the effects of household composition, individual resources, and social policy on the duration of couples' nonemployment. Understanding such influences can enhance our knowledge about how social risk factors manifest

themselves within vulnerable households and how they translate into social inequality and poverty at the aggregate level.

The differences found in the results for both countries need to be partly interpreted with caution. A direct comparison of effect sizes and significance levels is, of course, not possible as they were generated on the basis of two different data sources. Some findings nevertheless seem valid with regard to the discussed literature:

The additional time and income needs that come with dependent household members can affect the risk of nonemployment both negatively and positively. Although having children increases the risk of dual joblessness (Härkönen 2011), it also increases the likelihood of re-entering employment. The presence of household members in need of long-term care has the opposite effect. Marital homogamy is not a good predictor of spell duration, at least when it measures the similarity of partners across all levels of education and age. Women's resources, in turn, seem to play a decisive role in ameliorating couples' potential to overcome joblessness compared with men's. This might be connected to the so-called 'macho effect', i.e. the still-common preference of the male breadwinner model over the female breadwinner model of household production (cp. Härkönen 2007). Although educational heterogeneity as such is not helpful for couples, inequality in favour of the woman seems to be a key to ending dual joblessness as it makes the female breadwinner model more attractive. The models presented here reveal that couples have a comparatively higher chance of exiting nonemployment if the woman is in good health or highly educated, indicating that these women are more likely to take on the role of the single earner than are women in other households. This effect is a bit more pronounced in the UK model, which could be an indicator of a weaker macho effect in the UK compared with Germany.

Future studies could add to the presented findings in several ways. Contrary to the evidence of a weaker macho effect in the UK, former studies on the 1990s (e.g., McGinnity 2002) found that wives of unemployed men work more often in Germany than in the UK. Modelling the transitions of both partners simultaneously would perhaps provide more insight into how and why these patterns appear in the data. Another interesting route to follow would be the inclusion of the available life-history data for the BHPS and SOEP in order to model recurrent events. This could raise the number of observations, which is rather low in the case of the BHPS. The generally lower significance of results for the UK might be caused by a lack of variation in the

data, which is particularly true for the effect of care needs as the number of couples with children or household members in need of long-term care is very low. Taking couples' full employment history into account may also reveal changes in compositional and partner dynamics within households over time, which could provide a more precise picture of how reforms may have changed the face of social risks in both countries.

Furthermore, alternative explanations of the changes in the rates and composition of jobless couples' households should be tested. The increasing importance of activation measures, for instance, might have pushed more employable persons into the labour market while excluding the most vulnerable groups from it.

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Appendix

A1: Household structure, Germany

Individuals 25-64, in couple households	Educational level			
	primary	secondary	post-secondary	Total
1997				
Dyads with at least one employed partner				
n° (%) of individuals	1,036 (17.35)	3,286 (55.02)	1,650 (27.63)	5,972 (100)
average age	42,65	41,11	42,28	41,70
average health	0,84	0,88	0,91	0,88
average number of children in household	0,86	0,86	0,81	0,85
Dyads with none of the partners employed				
n° (%) of individuals	344 (32.33)	550 (51,69)	170 (15.98)	1,064 (100)
average age	54,04	52,96	52,67	53,26
average health	0,70	0,73	0,79	0,73
average number of children in household	0,35	0,37	0,36	0,36
Total				
n° (%) of individuals	1,380 (19.61)	3,836 (54.52)	1,820 (25.87)	7,036 (100)
average age	45,49	42,81	43,25	43,45
average health	0,80	0,86	0,90	0,86
average number of children in household	0,73	0,79	0,77	0,77
2007				
Dyads with at least one employed partner				
n° (%) of individuals	761 (10.12)	4,077 (54.23)	2,680 (35.65)	7,518 (100)
average age	45,46	44,50	46,42	45,28
average health	0,80	0,87	0,90	0,87
average number of children in household	0,69	0,70	0,74	0,71
Dyads with none of the partners employed				
n° (%) of individuals	200 (20.39)	573 (58.41)	208 (21.20)	981 (100)
average age	54,08	54,86	56,92	55,13
average health	0,58	0,71	0,77	0,69
average number of children in household	0,33	0,21	0,23	0,31
Total				
n° (%) of individuals	961 (11.31)	4,650 (54.71)	2,888 (33.98)	8,499 (100)
average age	47,25	45,78	47,17	46,42
average health	0,76	0,85	0,89	0,85
average number of children in household	0,61	0,64	0,70	0,65

Source: SOEP, own calculations

A2: Household structure, United Kingdom

Individuals 25-64, in couple households	Educational level			
	primary	secondary	post-secondary	Total
1997				
Dyads with at least one employed partner				
n° (%) of individuals	777 (21.90)	1,468 (41.38)	1,303 (36.72)	3,548 (100)
average age	45,44	40,84	40,95	41,88
average health	0,90	0,93	0,95	0,93
average number of children in household	0,84	0,91	0,90	0,89
Dyads with none of the partners employed				
n° (%) of individuals	229 (51.93)	137 (31.07)	75 (17.01)	441 (100)
average age	51,05	49,51	54,53	51,16
average health	0,65	0,77	0,79	0,71
average number of children in household	0,94	0,85	0,45	0,83
Total				
n° (%) of individuals	1,006 (25.22)	1,605 (40.24)	1,378 (34.54)	3,989 (100)
average age	46,71	41,58	41,69	42,91
average health	0,84	0,92	0,94	0,91
average number of children in household	0,86	0,91	0,88	0,89
2007				
Dyads with at least one employed partner				
n° (%) of individuals	611 (15.49)	1,739 (44.09)	1,594 (40.42)	3,944 (100)
average age	49,16	44,92	44,07	45,24
average health	0,91	0,94	0,95	0,94
average number of children in household	0,65	0,81	0,90	0,82
Dyads with none of the partners employed				
n° (%) of individuals	197 (44.67)	131 (29.71)	113 (25.62)	441 (100)
average age	53,73	53,80	58,92	55,08
average health	0,73	0,76	0,88	0,78
average number of children in household	0,53	0,50	0,13	0,42
Total				
n° (%) of individuals	808 (18.43)	1,870 (42.65)	1,707 (38.93)	4,385 (100)
average age	50,27	45,55	45,06	46,23
average health	0,87	0,92	0,95	0,92
average number of children in household	0,62	0,78	0,85	0,78

Source: BHPS, own calculations

A3: Independent variables: Germany

Variables	Mean, categorial variables in %	Std. dev.
Spell duration	28.7	32.8
Age difference	4.1	4.0
Woman's work experience (in years)	18.7	13.9
Man's work experience (in years)	27.8	14.2
Start of spell		
– 1997	34.7 %	
1997 – 2004	42.3 %	
2005 –	23.0 %	
Educational difference		
Low	72.0 %	
High	28.0 %	
Age of youngest child		
no children	70.6 %	
0-2 years	14.5 %	
3-5 years	5.5 %	
6-10 years	5.0 %	
11-15 years	4.4 %	
Household member in need of long-term care		
No	96.5 %	
Yes	3.5 %	
Health status of man		
Poor	20.8 %	
Good	79.2 %	
Health status of woman		
Poor	21.1 %	
Good	78.9 %	
Man's age		
< 30	12.8 %	
30-49	26.2 %	
50+	61.1 %	
Woman's age		
< 30	17.6 %	
30-49	25.8 %	
50+	56.6 %	
Man's level of education		
Low	15.6 %	
Medium	55.0 %	
High	29.4 %	
Woman's level of education		
Low	26.9 %	
Medium	55.7 %	
High	17.4 %	

Source: SOEP, own calculations

A4: Independent variables: United Kingdom

Variables	Mean, categorial variables in %	Std. dev.
Spell duration	32.8	35.3
Age difference	4.6	4.7
Woman's work experience (in years)	25.6	17.5
Man's work experience (in years)	16.5	14.1
Start of spell		
– Sep 1996	38.4 %	
Oct 1996 – Mar 1999	11.9 %	
Apr 1999 – Mar 2003	26.2 %	
Apr 2003 –	23.5 %	
Educational difference		
Low	47.9 %	
High	52.1 %	
Age of youngest child		
no children	73.6 %	
0-2 years	9.8 %	
3-5 years	6.3 %	
6-10 years	6.3 %	
11-15 years	4.0 %	
Household member in need of long-term care		
No	79.5 %	
Yes	20.5 %	
Health status of man		
Poor	14.9 %	
Good	85.1 %	
Health status of woman		
Poor	14.1 %	
Good	86.9 %	
Man's age		
< 30	13.1 %	
30-49	23.0 %	
50+	63.9 %	
Woman's age		
< 30	8.8 %	
30-49	23.5 %	
50+	67.7 %	
Man's level of education		
Low	39.6 %	
Medium	36.9 %	
High	23.5 %	
Woman's level of education		
Low	33.8 %	
Medium	36.9 %	
High	29.3 %	

Source: BHPS, own calculations

The many shapes of the welfare triangle:

How employment, family structures and welfare rights relate to changes in the distribution of household income in different countries

Abstract:

Income inequality within countries is commonly related to the role of the market, the state and the family in the national context of welfare production and redistribution. This article seeks to explore how developments regarding the welfare mix are related to changes in inequality in Germany, Poland, Spain and the United Kingdom. The focus lies on the shape of inequality among households and on the question of how household-level manifestations of the welfare triangle influence this shape. For this purpose, the Apha-Beta-Gamma method proposed by Chauvel (2016) is used to detect local inequalities in different parts of the income distribution. This method is combined with a counterfactual re-weighting technique (Biewen 2001) to visualise how changes in welfare aspects relate to changes along the income distribution. This combination of methods is applied to EU-SILC data of waves 2006 and 2011. Results point to distinct patterns and trends of household inequality in each country. Common trends found for some of the aspects studied, e.g. shrinking household size and fertility, or changing benefit rights, can have equalizing or disequalizing effects, depending on the country and on the part of the income distribution in question.

1. Introduction

A society's production of social and economic wellbeing is dependent on a variety of factors that are related to three central institutional areas, often referred to as the "welfare triangle" (Evers1990): the market, the state and the private household.[1] Institutions of these three spheres of welfare production – as well as interactions between them - have a significant impact on the distribution of socio-economic resources and risks in a given population (Albertini 2008; Bahle, Ebbinghaus and Göbel 2015; Esping-Andersen 1999). In their influential study on household income dynamics, DiPetre and McManus (2000) demonstrated that income mobility is dependent on the rate of events that trigger and counterbalance income change. These events are, for example, job loss and recuperation, child birth, union formation and separation. Their financial impact is modified by the tax-benefit system. The short- and long-term effects of income-changing events are therefore highly dependent on national configurations of the labour market, the welfare state and family structures (Ranci 2010).

This paper relates changes in these three areas to changes in income inequality between 2005 and 2010 in 4 European countries – Germany, Poland, Spain and the United Kingdom. The studied time span is relatively short but saw rapid changes in the rates of trigger events as well as their welfare context in many countries. The case selection represents an interesting group of countries because of their rather distinct economic and institutional trajectories during and after the economic recession of 2008/2009. Germany, for instance, is among the few EU member states that did not experience rising unemployment in this period. This was attributed mainly to the policy of temporary short-time working schemes that preserved jobs during the crisis and kept workers available to companies when markets recovered. Spain, in contrast, is one of the crisis-countries that suffered the strongest increases in unemployment and still struggles with an unemployment rate of over 20 percent. Youth unemployment is even higher, at about 50 percent - a result of high employment protection for older, permanent workers and little-to-no security for newcomers to the labour market. The Polish economy was exceptionally robust during the recession. Poland, in fact, was the only EU country that achieved positive economic growth rates in 2009. The economic

[1] The concept of welfare mix / welfare triangle was proposed in the research on welfare pluralism in the late 1980s / early 1990s. This concept locates welfare provision between the poles of the market, the state and the private community (i.e. families and households) while acknowledging the existence of intermediary institutions, the so-called "third sector" (Evers and Laville 2014).

slowdown did, however, cause unemployment to grow in Poland but this trend came to a halt in 2014 without ever reaching the high unemployment levels of the years before EU accession. In the United Kingdom, unemployment increased only until 2012 and reached below-crisis levels again by 2015. This quick and unexpected recovery was ascribed to the flexibility of labour market regulations concerning lay-offs and re-hiring as well as possibilities for cuts in wages and work hours (Eurostat 2016a, OECD 2010, OECD 2014, OECD 2016a, OECD 2016b).

Three of the studied countries - Germany, Poland and Spain - experienced decreases in household size and changes in fertility between 2005 and 2010 (Eurostat 2016b, OECD 2016c), two factors that are likely to influence the effect of job losses on household income. Although such components of family structure are frequently taken into account when studying income inequality, the principal unit of analysis typically remains the individual (Jenkins and Van Kerm 2008). Here, the household level is chosen instead for two reasons. First, the household can be identified as key social unit of income pooling redistribution (Albertini 2008; Barbieri and Bozzon 2016), and second, it is the level of intersection where welfare states and labour markets produce their joint effects on the income distribution. Studying the household level directly promises important insights into these interactions and into the relationship between them. This article examines changes in all three areas of the welfare triangle in relation to household-level effects on income inequality. The interest lies on disposable, equivalised household income. This measure sums up households' state- and market incomes net of taxes and corrects for household size while considering household-internal economies of scale.

Changes in the areas of the market, the family and the state will be operationalised with view to their potential effects on household incomes. In the first area, labour market conditions affect households' opportunities to earn income from employment, which is the main source of market income for the majority of the population and important protector against individual poverty (De Graaf-Zijl and Nolan 2011; Jenkins et al. 2012). The earnings possibilities of households are measured by household work intensity, i.e. the percentage adult household members' time spent in full- or part-time employment. Related to changes in households' earnings possibilities, as well as to their income needs, are transformations of household and family structures. This paper will focus on changes in household size reflected by the number of adults and children in the

household. As for the influence of the state level, the study focuses on welfare benefits as alternative and addition to market income. The concrete measurement is households' probability of receiving unemployment and disability benefits, stemming from both insurance- and tax-based schemes. These two broad categories of transfers cover the central types out-of-work benefits for the working-age population in most European countries (Erlinghagen and Knuth 2009; De Deken and Clasen 2011). Unemployment transfers as well as sickness and disability benefits underwent important changes in many European countries. Shifts between the insurance and assistance principle and changes in eligibility conditions are two common examples. In the course of the German 'Hartz-reforms', for example, wage-related long-term unemployment assistance was abolished in 2005 and replaced by a means-tested benefit with amounts varying by household size. This system also integrated large parts of former social assistance recipients. At the same time, the duration of unemployment insurance was cut and activation measures were introduced for both types of benefits (Biewen and Juasz 2012). In other countries, unemployment benefits are generally less important for the population and disability benefits serve as important, functionally equivalent income source. Also in this area, changes can be found. In the United Kingdom, for example, the Employment and Support Allowance replaced the passive Incapacity Benefit in late 2008. For those recipients deemed able to work, benefit rates are lower and eligibility is tied to the participation in work-related activities and counselling (Lefresne 2010). Also in Poland, there was an expansion of policies aimed at increasing labour market participation. Between 2004 and 2008, activation programmes were introduced for registered unemployed and eligibility to disability pensions and early retirement schemes became more restrictive (Portet and Sztandar-Sztanderska 2010). Spain, in contrast, opted for an extension of unemployment benefit rights in 2009 as a means to mitigate the extreme impact of the recession on the highly segmented Spanish labour market (Gutierrez 2009). The benefits where designed as short-term measure for those that lacked the opportunity to build up claims in the core systems of social security, in spite of prior employment.[2]

[2] in 2012, i.e. after the time span studied here, a series of reforms have been introduced to reduce labour market duality, e.g. in the areas of active labour market policies, collective bargaining (OECD 2012).

The paper proceeds as follows. Section 2 will discuss how household composition and work arrangements interact differently depending on the conditions of the welfare state context. These interactions are crucial for social risk constellations within societies and therefore produce distinct patterns of income inequality. The analytical strategy to study these patterns will be presented in section 3, which describes the two methodological approaches and their combination in a step-by-step manner. Afterwards, the data source is introduced in section 4, along with descriptive statistics on the variables used. Section 5 presents the analytical results, which are then summarised and evaluated in the conclusion.

2. Background

When looking at the distribution of income, the structure and demand of the labour market has a direct impact on the types of employment and on the range of salaries that can be yielded by individuals with a given profile (e.g., with a certain skill set, age, gender or health status). The tax-benefit system of the welfare state interacts with institutions of the labour market, creating supply-side effects. Wage regulation, employment protection and social benefits that replace market income during unemployment or sickness are well-documented factors influencing labour market activity (Amable, Demmou and Gatti 2011). While generous out-of-work benefits may diminish incentives to work, in-work benefits for low-wage earners (e.g. in the form of tax credits) can have the opposite effect (Marx et al 2013). Both tax reliefs and out-of-work benefits can be effective tools to reduce the poverty rates of vulnerable population groups. This is less evident for other welfare state policies that target the labour market and have gained in importance over the past two decades. Activation policies, if well-designed, can enable (re-)employment of individuals with otherwise low prospects for a job (Konle-Seidl and Eichhorst 2008). This does, however, not guarantee an adequate level of income by itself. In some cases, “successful” activation may be connected to an increase in low-paid or marginal employment (Bahle, Ebbinghaus and Göbel 2015). Even if counterbalanced by minimum wages or in-work benefits, such a situation could have a substantial influence on the income level of individuals in these programmes, as well as on the overall structure of wages and household incomes. The distribution of household incomes is influenced not only by wages and benefits related to work or worklessness. Welfare states also support households by granting family benefits or providing childcare. These policies differ in their levels of targeting versus universalism

and the focus on caregivers' support versus work-family reconciliation. States furthermore apply different rules of taxation to different household types. Taken together, these factors affect how the employment potential of parents can be realised and which division of labour within households is beneficial regarding their overall income situation. In other words, the system of taxes, benefits and social services affect the strategies families employ to balance care and income needs (Becker 1985; Sarasa 2008; Kangas and Rostgaard 2007). The way different family types are treated in this system has an influence on inequalities among them, e.g. between single parents and couple families. It also affects their situation relative to non-family households (Esping-Andersen 2009). Such differences may, in turn, stimulate the formation of certain household types while discouraging the choice of other living arrangements. Welfare-state policies therefore play an important role in shaping cross-national differences in union formation and fertility (Cooke et al. 2013).

The public debate on effects of the economic crisis in many European countries focused on rising unemployment. This concept, however, refers strongly to population groups that are registered as unemployed and receive unemployment benefits. Other situations of worklessness that can increase as a result of economic crises are ignored. Erlinghagen and Knuth (2009) demonstrated that Western countries differ strongly in their institutional definitions of unemployment and inactivity. Individuals with the same profile in terms of education, health, age and gender are therefore registered administratively as unemployed ("active") in some countries and as disabled or early retired ("inactive") in others. The latter may still search for employment and therefore show up as unemployed in survey data that apply the International Labour Organization's definitions of employment and unemployment. Nevertheless, the study of Erlinghagen and Knuth strongly suggests that recipients of welfare benefits base the judgment of their status on the type of benefits they receive. For this reason, this article does not study unemployment within households but includes other situations of nonemployment as well. More specifically, the focus will be on the work intensity of households and how its changes between 2005 and 2010 affected income inequality among them.

De Graaf-Zijl and Nolan (2011) found that low work intensity and household nonemployment are strongly related to relative poverty risks on the micro level. There is, however, strong variation across Europe and the relationship is less evident on the

macro level. Courluy and Vandenbrouke (2013, p. 27-28) offer a comprehensive explanation for the contrasting results between the individual and aggregate level:

> "First, household joblessness correlates positively with pre-transfer poverty, but the impact of household joblessness on post-transfer poverty is mitigated by social spending. Second, national pre-transfer and post-transfer poverty rates are also influenced by the poverty rates prevailing in 'non-jobless' households, which carry a large weight in the overall poverty record of many countries. Third, in a cross-country comparison higher individual employment rates are associated with lower levels of pre-transfer poverty among the 'non-jobless' households. Hence, higher individual employment rates reduce pre-transfer poverty rates both because of their impact on household joblessness (individual and household employment correlate with each other) and because of their impact on pre-transfer poverty among the 'non-jobless' segment. Finally, higher individual employment rates are associated with higher levels of spending on working-age cash benefits. Higher levels of spending are associated with a larger extent of poverty reduction through social transfers, both within the jobless and the non-jobless segment of the population. Together, all these elements explain why in a cross-country comparison post-transfer poverty correlates with individual joblessness but not with household joblessness."

In contrast to their results for workless households, the authors did find a slightly positive correlation between the number of individuals living in work-poor households and post-transfer poverty, as well as between changes in both indicators between 2004 and 2008. Overall, their results highlight the diversity of EU countries. Changes in poverty are linked to developments in work-rich and work-poor households, as well as the level of polarisation between them in different ways. This diversity is exemplified by Corluy and Vandenbrouke's results for the four countries that are subject of this study. For Germany, they found that rising individual employment and the declining share of individuals living in work-poor households did not lead to a decrease in household worklessness due to rising polarisation between employed and nonemployed households. Nor did it reduce at-risk of poverty rates, as these increased significantly for all working-age households, although more so for households with low work intensity. In Poland, sharply rising individual employment was accompanied with decreases in household joblessness and polarisation. This contributed to strongly declining poverty risks in the working-age population, although the decrease of poverty

rates in work-rich households was even more pronounced. Changes in Spanish poverty rates were less pronounced although individual and household nonemployment decreased substantially. In the UK, the reduction of household joblessness and polarisation as well as the reduction of poverty in jobless households lead to a decline in overall poverty within the working age population. The authors attribute this development to activation and benefit policies which were obviously less successful in reducing poverty in the first mentioned case, Germany.

The logic and principles of the social benefit system thus play an important role for the distribution of income across households. For some time, scholars were puzzled by what seemed to be a "paradox of redistribution" (Korpi and Palme 1998): Countries that targeted their benefits more strongly towards the poor appeared to have lower levels of redistribution than countries that granted benefits to a bigger proportion of society. A recent study by Marx et al. (2013) found this result to be partly driven by country selection, data source and the operationalisation of targeting and income sources. Moreover, many countries originally included in the study of Korpi and Palme underwent substantial changes in their benefit systems. While targeted benefits were traditionally associated with a strictly means-tested provision for the nonemployed, their logic has changed towards providing incentives and support for labour market reintegration. In-work tax credits, benefits topping up low wages and mandatory activation programmes for benefit recipients have been introduced in many countries while social insurance rights have become more restrictive or are harder to achieve due to changed labour market conditions. Today, there are a number of countries that allocate most of their social transfers to lower income groups and achieve a high level of redistribution. The opposite case can, however, still be observed. In the four countries selected for this study, Germany combines a relatively high level of redistribution with medium-level targeting, while Poland scores high on both axes. Spain allocates a high percentage of benefit transfers to lower income groups but does not achieve higher levels of redistribution than the United Kingdom with a much lower level of targeting.

Confirming the importance of the welfare state and the household for real differences in people's standard of living, Medgyesi's (2014) study of income inequality in the European Union between 2004 and 2010 shows that changes of market income are generally more pronounced than those of disposable income (i.e., an income measure that is corrected for household size, taxes and transfers). The study furthermore found

that the contribution of different kinds of market- and state-based income sources to changes in inequality varied strongly across countries. Market income and pensions were found to be inequality enhancing in most countries while other social transfers and taxes had the tendency to reduce inequality slightly. Turning to the household level, Medgyesi found that the effects of household composition in terms of family constellation, age and education on overall inequality vary more across countries than the contribution of household work intensity. In the countries studied in this article, the estimated contribution of work intensity in 2010 was between 10 and 15 %. Between 2004 and 2010, its importance increased in Poland and Spain and decreased in Germany. In the United Kingdom, it backlashed to its initial level after decreasing slightly in 2007. In constrast, the contribution of household type was estimated to around 2% in Spain, 3% in Poland, 4% in the United Kingdom, and over 8% in Germany. In Poland, household structure lost steadily in importance while in Germany, a steep increase could be observed.

This result for Germany is in line with Peichl, Pestel and Schneider (2012), who found that decreases in household size were related to increasing inequality, poverty and richness in the 20 years after the German unification. Nevertheless, shifts in the income distribution would have also occurred in the absence of the observed changes in household structures. Biewen and Juhasz (2012) found that the most important explanatory factor for Germany's increase in inequality was increasing inequality in labour earnings, followed by changes in employment outcomes of households and alterations of the tax system. Changes in household structures and in the transfer system seemed less important. This could, however, be different in countries where the family's importance in the welfare mix is traditionally more pronounced. Barbieri and Bozzon (2016), for example, demonstrated that the household-structure altering event of child birth is more poverty-inducing in the traditionally 'familistic' southern European welfare states than in the rest of Europe. The lack of direct monetary support for families is aggravated by a strong insider-outsider divide on the labour market that exposes young workers (i.e. potential parents) to high levels labour market insecurity and low levels of social protection.

3. Analytical approach

The preceding discussion clarified that the interaction of labour markets, welfare states and work-family arrangements can have very diverse effects on economic inequality between households. This study aims to explore the effects of these aspects of welfare production further by combining two different strategies of analysing income distributions. The first is the Alpha-Beta-Gamma method (ABG) introduced by Chauvel (2016) that aims at measuring both the intensity and shape of inequality via a set of three indicators: α, which measures inequality around the median of the distribution, β, that corrects for deviations from α in the upper tail of the distribution and γ, which accounts for deviations at the bottom.

This approach is based on the ranks of income units within a society, i.e. their position within the income distribution.[3] For each given household, its standardised income rank pi is defined by the proportion of households above it in the income distribution. The proportion below is given by $1\text{-}p_i$. Its quantile rank is consequently defined by $p_i/(1\text{-}p_i)$. To model the distribution of quantile ranks, a log-logistic distribution of the Champernowne-I-Fisk type is defined by

$$(1) \quad ln(m_j) = \alpha ln\left(\frac{p_i}{1-p_i}\right)$$

with medianised income m_j (i.e. income devided by median income) the parameter α measures the stretching out of the distribution curve, hence inequality. Following Chauvel (2016), ln(mj) will further on be referred to by M_i and $ln(p_i/(1\text{-}p_i))$ by X_i, re-formulating equation (1) into the simplified notation

$$(2) \quad M_i = \alpha X_i$$

In a next step, the empirical divergence from the CF distribution is measured by the ISO function

$$(3) \quad M_i = ISO(X_i)X_i$$

with $ISO(X_i)$ being the ratio between M_i and X_i. In the case ISO is a constant, inequality along the entire distribution is described by one single parameter, α. Because this may not be the case empirically, two further shape parameters, β and γ are introduced that correct for deviations from α in the upper and lower tails of the distribution. Chauvel

[3] The following description is a summary based on Chauvel 2016, p.54-59.

(2016) uses linear combinations of hyperbolic tangent functions for describing the shapes of the upper and lower asymptotes of ISO(X):

$$(4) \qquad B(X) = \frac{\theta_1(X) + \theta_2(X)}{2}$$

$$(5) \qquad G(X) = \frac{-\theta_1(X) + \theta_2(X)}{2}$$

where $\theta1(X)=\tanh(X/2)$ and $\theta2(X)=\tanh^2(X/2)$. Redefining ISO(X) as

$$(6) \qquad ISO(X_i) = \alpha + \beta B(X_i) + \gamma G(X_i)$$

results in the adjustment of the ISO function (3) to

$$(7) \qquad M_i = \alpha X_i + \beta B(X_i) X_i + \gamma G(X_i) X_i \, .$$

Using this linear function, α, β and γ can be estimated jointly using OLS regression. In this paper, this is done by using the ABG ado for STATA (Chauvel 2014). A special interest will be on the built-in tool of ISO-graphs that plots $ISO(X_i)$ against X_i, i.e. the local empirical deviations from the CF function along the income spectrum measured by the logit rank.

The second method that will be used is based on Biewen's (2001) application of DiNardo, Fortin and Lemieux's (1996) reweighting-procedure to construct counterfactual income distributions (henceforth, DFL). The re-weighting method is a regression-based technique that simulates the contribution of certain variables to differences between income distributions. The procedure is based on a simple thought experiment: How would the distribution of incomes look in one population if income units (e.g. individuals, households) were more similar to another population regarding a specific aspect of interest (e.g. their education or employment)? At the same time, compositional differences in other characteristics are held constant. In the case of this study, the country-level distributions of household income are compared between two time points, t_0 and t_1. The question is therefore specified to: How would the income distribution in t_1 differ from what we observe if selected characteristics of households would be the same as in t_0, while changes in other variables are controlled for? By comparing this counterfactual distribution with the observed ones of both time points, the influence of changes in household characteristics becomes visible.

There are alternative methods for investigating changes of inequality, namely decomposition of inequality indices by income source or population subgroups (e.g., Shorrocks 1982). Suitable indicators of inequality differ in terms of which parts of the income distribution they are more or less sensitive to. The ABG method has proven itself to describe inequalities in the middle, top and bottom of the distribution adequately and fits empirical data better than a simple CF distribution or the GB2 (Chauvel 2016, p. 64). Also, ABG does fulfil the criteria for decomposability (Chauvel 2016, p. 60). The choice of applying DFL instead of decomposition is related to the fact that effects of changes in single factors can be isolated more clearly than in subgroup decomposition (Biewen 2001, p. 185). When modelling the effect of one variable, it is simple to control for other, possibly correlated variables by adding them to the regression equations that are computed to produce the weights of counterfactual distributions. Another advantage of DFL is the intuitive interpretation offered by the counterfactual question that leads the analysis. By re-weighting ABG, the observed and counterfactual distributions can be visualised by plotting their ISO functions. In addition, three sets of indicators are derived that describe factual and counterfactual inequality at the middle, top and bottom of the distribution. This makes the proposed approach superior to classic regression-based decomposition that merely compares the means of distributions (Jenkins and Van Kerm 2009). While the original DFL approach uses re-weighted kernel-density estimates from which factual and counterfactual indicators and visualisations are derived, the procedure of Biewen (2001) directly reweights the discrete distribution in the data at hand. This makes it straight-forward to combine the DFL method with ABG.

The modified DFL re-weighting method proceeds as follows.[4] A measure of discrete household income in a given sample at time t, I(t), can be described as

$$(a) \qquad I(t) = \sum_{i=1}^{I} g(y^i)\, P(y^i|t)$$

where y_i is the income of household i, $g(y_i)$ is the function of the income measure and $P(y_i \mid t)$ is the weight of household i, i.e. the probability that household i has income y_i at time t. For modelling the influence of a changing household characteristic xi on income,

[4] The following paragraphs closely follow Biewen 2001, p.186.

the variable of interest needs to be incorporated into the equation, along with relevant control variables z_i. This is done by including these variables in the household weight:

$$(b) \qquad I(t) = \sum_{i=1}^{I}\sum_{j=1}^{J}\sum_{k=1}^{K} g(y^i)P(y^i,\ x^j,\ \ z^k \mid t)$$

$$= \sum_{i=1}^{I}\sum_{j=1}^{J}\sum_{k=1}^{K} g(y^i)P(y^i \mid x^j,\ z^k,\ t)\ P(x^i \mid z^k,\ t)\ P(z^k \mid t)\,.$$

The three weights – i.e. the probability of 1.) income given the variable of interest, the control variable and time t; 2.) the variable of interest given the control variable and time t; and 3.) the control variable given t – can now be used to re-weight the income function $g(y^i)$ according to changes in either y, x, or z.

$$(c) \quad I(t_y,\ t_x,\ t_z) \quad = \sum_{i=1}^{I}\sum_{j=1}^{J}\sum_{k=1}^{K} g(y^i)P(y^i \mid x^j,\ z^k,\ t_y)\ P(x^i \mid z^k,\ t_x)\ P(z^k \mid t_z)\,.$$

In the case of the present analysis, there are two time points, 2005 and 2010. We are interested in knowing whether changes of variable x contributed to changes in y. Thus, we ask ourselves: How would g(y) look like in 2010 if x hadn't changed since 2005. At the same time, we want to control for the possible influence of changes in the distribution of another variable z. We are therefore interested in $I(t_y=2010,\ t_x=2005,\ t_z=2010)$.

Following Biewen (2001), the original DFL framework is now adapted to the case of survey data. The dataset to be re-weighted is $S(t_y=2010)$. The re-weighting factors will be derived from $S(t_x=2005)$. The estimation function of I(.) would be given by

$$(d) \quad \hat{I}(t_y,\ t_x,\ t_y) \quad = \sum_{s \in S(t_y)} g(y_s)\left[\pi(s|t_y)\ \hat{\psi}_x(x_s \mid z_s,\ t_x,\ t_y)\ \hat{\psi}_z(z_s \mid t_y)\right]$$

where $\pi(s|t)$ represents the sample weight of a respondent. The re-weighting factor ψ_x measures the ratio of probabilities for observing x given the control variables z between 2005 and 2010:

$$(e) \quad \hat{\psi}_x(x_s|z_s, t_x, t_y) = \frac{\hat{P}(x_s \mid z_s,\ t_x)}{\hat{P}(x_s \mid z_s,\ t_y)}$$

The probabilities are estimated using regression models that are selected according to the scaling of x (i.e., logit for binomial, ordered logit for ordered variables and multinomial logit in the nominal variables).[5]

The re-weighting factor for the remaining control variables ψ_z is estimated from the pooled sample of $S(t_y)$ and $S(t_x)$ by:

$$(g) \quad \hat{\psi}_z\left(z_s|t_y\right) = \frac{\hat{P}\left(t_y \mid z_s\right)}{1-\hat{P}\left(t_y \mid z_s\right)} = \frac{\hat{P}\left(t_y \mid z_s\right)}{\hat{P}\left(t_x \mid z_s\right)}$$

For combining the DFL method with ABG, equation (6) is "plugged into" equation (d), where π^* is the normalised product of π, ψ_x, and ψ_z. The resulting equation estimates the local deviations from the CF distribution's alpha in a dataset re-weighted according to changes in variable x, holding other changes constant:

$$(6d) \quad \widehat{ISO}\left(t_y,\ t_x,\ t_y\right) = \sum_{s \in S(t_y)} \left[\alpha + \beta B\left(X(y_s)\right) + \gamma G\left(X(y_s)\right)\right] \pi^*\left(s,\ t_y,\ t_x\right)$$

As mentioned above, in the specific case of this study, t_y represents 2010 and t_x 2005. The interest lies not only on changes in one variable but on several, and the set of control variables changes according to which variable is considered as x. Therefore, equation (6d) will be estimated several times for building different sets of counterfactual ABG coefficients and ISO-curves. In addition, the ABG procedure will also be used to visualise the factual distributions for 2005 and 2010, where the only weights applied are the household sample weights included in the original datasets.

4. Data source and variables used for weight estimation

As data source for this study, the EU-SILC (European Union Statistics on Income and Living Conditions) was selected for its unique combination of individual- and household-level socio-economic information.[6] The EU-SILC was launched in 2003 by a group of 7 European countries and was gradually extended to include all EU member

[5] This study follows Daly and Valetta (2004, 2006) in choosing logit instead of probit estimation as in Biewen (2001). The construction of weights from multinomial and ordered logit models was adopted from Daly and Valetta (2006 Appendix B).

[6] EUSILC UDB 2011 – version 3 of March 2014, EUSILC UDB 2010 – version 5 of March 2014, EUSILC UDB 2006 – version 4 of March 2010, EUSILC UDB 2005 – version 5 of August 2009; more information:
http://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions

states as well as Iceland, Norway, Switzerland and Turkey. In a nutshell, EU-SILC data stem from national data sources that are harmonised for the purpose of comparability in accordance with an agreed set of guidelines. The dataset covers a wide range of indicators on individuals' life situation, including, for example, employment and education, family and care arrangements, health and well-being. In addition, there is a rather detailed assessment of both individual and household incomes. This makes EU-SILC highly valuable for investigating socio-economic inequality in a comparative research design. For the purpose of this study, the household was chosen as level of analysis.

The sample was restricted to households having at least one adult member between the age of 25 and 64. The author believes that this focuses the analysis on the group that is most affected from interactions between all three areas of income production and re-distribution, i.e. the state, market and family. Among households with very young members, students are over-represented. The family may play an indirect role through private transfers and less so by income pooling within the household. Among older households, pensions are the main source of income. Although some types of pensions may be considered market incomes (e.g. private or occupational pensions), they reflect former market conditions of the past more than present ones. As for the group below 25, family bonds beyond the household may also play a role for the elderly, e.g. in terms of economic impact of long-term care needs. Although these kinds of relations are important for household incomes, they are beyond the scope of this study that focuses on effects of family structures within households. Older and younger individuals are thus only included in the study if other members of their household belong to the target group of this study, which is the working-age population. Incomes in this age group are particularly affected by all three areas of welfare production. Labour market conditions, the regulation of social transfers and household composition are of particular interest.

Equivalised annual disposable household income (variable HX090 in EU-SILC) serves as dependent variable in the analysis because it is affected by changes in market income, taxes and benefits alike. The variable measures the income accumulated over the year prior to the interview, i.e. 2005 and 2010.[7] Disposable household income is

[7] The income reference period in Germany, Poland and Spain is the preceding calendar year. In the United Kingdom, the variable refers to the year of the interview. In order to compare the same income years across countries, four different waves of EU-SILC are used. For Germany, Poland and Spain, data

equivalised according to the number of adults and children living in the household. Therefore, the variable is a suitable candidate for a ranking strategy because it makes income positions comparable across households. In order to avoid difficulties that can arise with outliers, negative or zero-incomes when constructing the re-weighting factors, the variable was winsored, i.e., the upper and lower percentile of the distribution were excluded from the analysis.

The variables used for re-weighting comprise information on household structure, household employment and benefit receipt. Because of its simplicity when computing the counterfactual re-weighting factor ψ_x, benefit receipt shall be discussed first. As mentioned above, unemployment and disability benefits seem to be of special interest for this study as they were subject to substantive reforms in some countries, while remaining relatively stable systems in others. In this analysis, changes in benefit rights are operationalised as shifts in the propensity of households to receive a benefit, while holding household's characteristics and composition constant. The variables used to model benefit receipt are PY090N, PY120N and PY130N (net amount of unemployment, sickness and disability benefits received by individuals over the income reference period). On the basis of these variables, dummy-indicators were constructed that measure whether a household includes a member receiving the given benefit or not. These indicators were then used as dependent variables in logit estimations in order to predict the probability of receiving the benefit in the year 2005 and in 2010. Based on these, ψ_x, can be constructed simply by calculating the ratio of both probabilities. Note that in the logit models, the other x-variables of this study are used as control variables, in addition to further controls of age, education and region, which will be discussed further below.

The changes in household and family structures investigated in this analysis include the number of adults and the number of children living in working-age households. Household members are considered children if they are younger than 16 or between age 16 and 25 and living with their parents in the same household.[8] The variable counting

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are taken from waves 2006 and 2011 (income reference years 2005 and 2010). Data on the United Kingdom stem from waves 2005 and 2010.

[8] Further definition of truly "dependent" children over 16 proved difficult for two reasons: First, EU-SILC does not allow for differentiating between regular employment and paid apprenticeships or tertiary degree programs that involve paid work. Second, in order to detect households' main and secondary earners (the latter being, e.g., children in above-mentioned programmes), households with self-employed members would need to be excluded from the analysis. In EU-SILC, income from self-employment in

household-adults was restricted to three categories. Category one stands for a single-adult household, category two for a two-adult household and category three includes households with three or more adults. Four categories were chosen for counting the number of children. The first indicates that there are no children in the household, the second stands for a single child, the third for a household with two children and the fourth for three children or more. In order to model the effects of changes in these variables of household composition, it is necessary to estimate the propensity of a household to have a certain number of adults or children. Following Daly and Valetta (2006), multinomial logit models are used. To construct ψ_x, year-ratios of the predicted probabilities are calculated for each of the variables' values and subsequently added.

Household employment was measured in terms of household work intensity using the EU-SILC variables PL070 and PL072 from waves 2005 and 2006, and PL073, PL074, PL075 and PL076 from waves 2010 and 2011. These variables count the number of months a person was working full- or half time over the income reference period (including self-employment). These variables were used to compute the total number of working months of adults within a household.[9] This sum was divided by 12 and by the number of adults in the household, resulting in the household-percentage of months in paid work. Because certain combinations of household size and scope of employment are more often than others, the resulting variable had peaks around certain values and was therefore summarised into three categories. Category one represents low work intensity, i.e. a percentage of household-employment up to 25 percent. This percentage would, for example, be assigned to a household with two adults of which one worked part-time over the income reference period while the other was nonemployed. The second category captures work intensity between 26 percent and 74 percent, representing, for example, a single person working half-time over a year, a couple with one full-time earner or three adults of whom one is non-employed while the others work full-time. Finally, category three stands for high work intensity, i.e. household employment of over 75 percent. High work intensity values would be assigned to a fully employed household, a 1.5-earner couple or, for example, a household with three adults of whom two work full time and one works half time throughout the reference period. The three categories of work intensity represent "threshold values" in an underlying

some cases includes all gains and losses from business and is therefore not comparable with other household members' wages.

[9] In order to account for low work intensity, a month in part-time work is considered half a working month.

continuum of household work intensity. For this reason, an ordered logit model is used to predict the probabilities of a certain work intensity in a household. The procedure of constructing ψ_x from the model's results corresponds to the one used for household and family structure.

A re-weighting factor ψ_z was constructed for each of the counterfactual cases in order to control for the marginal changes in variables other than those modelled explicitly by x. These re-weighting factors measure the ratio of the probability of being observed in 2011 against 2006[10], given a certain set of z characteristics in both years. In addition to the variables used for constructing the counterfactual weights, additional controls were introduced in all models: The mean age of household adults as well as the square of mean age (constructed from variable RX010 of EU-SILC), the highest education of adults in the household (derived from variables PE040 and PE010), and a variable measuring the degree of urbanisation (DB100), which serves as rough indicator for economic opportunities in the region a household is situated.

5. Results

Table 1 contains descriptive information about the above-described variables and merits further investigation before moving to the analytic results of the paper. The structure of the welfare production aspects under study have changed quite dramatically in some cases, given the fact that a relatively short time span is observed. Household size has dropped considerably in Germany due to a shrinking percentage of households with two or more adults. This development is even more pronounced in Spain. Poland, in contrast, has a rising share of households with more than three adults while the importance of other households decreased. The United Kingdom also experienced a drop in the number of single households and in households without children. In the other countries, the percentage of childless households increased by between three to six percent.

[10] 2010 against 2005 in the United Kingdom

Table 1: Descriptive statistics

Country	Germany		Poland		Spain		United Kingdom	
Year [a]	2005	2010	2005	2010	2005	2010	2005	2010
Number of households in sample	10452	9835	12236	10401	9407	10307	8134	5742
Summary statistics [b]								
Household income [c]	17852.81	21599.91	3932.98	6136.06	13720.05	14690.79	24174.97	21626.35
1-adult households	40.03%	42.54%	18.88%	17.82%	13.17%	20.05%	32.20%	31.01%
2-adult households	56.55%	54.06%	59.85%	55.84%	64.25%	59.91%	61.38%	62.45%
3 or more adults in household	3.42%	3.02%	21.26%	26.33%	22.57%	20.04%	6.43%	6.54%
Households without children [d]	59.21%	62.31%	41.00%	44.88%	45.64%	51.86%	55.46%	53.16%
1 child in household	20.14%	19.11%	25.61%	25.30%	25.33%	23.24%	18.25%	18.40%
2 children in household	15.67%	14.10%	22.22%	21.39%	24.96%	19.98%	18.23%	19.65%
3 or more children in household	4.99%	4.48%	11.16%	8.43%	4.07%	4.92%	8.06%	8.79%
Work intensity <= 25%	29.13%	24.30%	28.96%	24.91%	16.37%	24.33%	27.07%	25.72%
Work intensity > 25% & < 75%	29.15%	25.06%	35.86%	37.91%	42.72%	36.32%	26.01%	25.91%
Work intensity >= 75%	41.72%	50.54%	35.18%	37.48%	40.88%	39.36%	46.92%	48.37%
Unemployment benefits receipt	21.84%	19.29%	9.71%	6.65%	12.41%	24.26%	2.86%	4.63%
Sickness/disability benefits receipt	10.57%	10.17%	17.76%	15.00%	9.07%	7.09%	12.66%	13.33%

[a] Information on number of adults and children refers to 2006 and 2011 for Germany, Poland and Spain. All other data refer to 2005 and 2010. [b] Weighted means and proportions [c] Mean equivalised disposable household income [d] Households with at least one adult aged 25 to 65

Source: EU-SILC 2005, 2006, 2010 and 2011

Household employment intensified in Germany and the United Kingdom due to an increase in fully employed households and decreasing shares of medium and low work intensity households. In Poland, low-work intensity decreased as well while the shares of medium-to-fully employed households increased. The exact opposite can be observed for Spain. In the area of welfare benefits, the data confirm that the German system puts a stronger emphasis on unemployment compared to disability schemes than Poland and the United Kingdom.

The share of unemployment benefit recipients dropped slightly between 2005 and 2010 in Germany and more significantly in Poland. In the latter case, also the share of disability benefits decreased. As these data include insurance and assistance benefits, the drop is most likely explained by increased employment. It may, however, be possible that institutional changes at the beginning of the observation period changed the overall composition of benefit recipients. This would not be captured by a general percentage as in Table 1. When modelling the propensities of benefit receipt, such structural changes could, however, play a role. They may also be at play in the UK where unemployment- and disability benefit receipt increased slightly despite of

increasing employment. In Spain, the share of households receiving disability benefits decreased while the share of unemployment beneficiaries almost doubled. This is certainly an effect of collapsing labour markets but could also be connected to reforms in the course of the crisis.

How exactly did these changes influence income inequality across households? And what if some of the observed changes had not occurred since 2005/2006? What if, for example, German and Spanish households had just as many kids as in 2006? How would the income distribution look like if the British had less fully employed households? Would the Polish be less well off with fewer adults living together, contributing to their households' overall income? Table 2 presents the results of the DFL-re-weighting procedure applied to the ABG method of measuring local inequalities.

The pattern dominating Table 2 is one of negative beta-coefficients and positive gamma. This means that empirically, both the rich and the poor are poorer compared to the CF-distribution without shape-coefficients. The resulting isograph has a negative slope. There are two exceptions from this pattern among the factual distributions. In 2005, Poland had negative values for both beta and gamma. The poor were richer and the rich were poorer than around the median, leading to an isograph that was bent downwards on both ends. The other income distribution that deviates from the general pattern is that for Spanish households in 2010. Beta and gamma are both positive, indicating that the rich are richer and the poor are poorer than in the CF distribution. The confidence interval for beta, however includes zero and the R-squared is low compared to the modelfit reported for the other estimations in Table 2. The combination is found twice more for Spain in the counterfactual simulations for the number of children and unemployment benefits. Here, the confidence bands of all three shape indicators are even wider and R-squared is at only 71% and 57%, respectively. Overall, the dispersion of Spanish household income ranks in 2010 fits less well into the ABG framework than in 2005. A possible reason could be the higher incidence of extremely low and negative incomes in the 2010 data. Yet, a more generous trimming of the income variable proved not to improve the modelfit. Table 2, however, shows that some of the simulations lead to higher values of R^2. Re-weighting observations according to the 2005/2006 distribution of adult household members, employment intensity and

disability benefits improved the modelfit. Re-weighting for number of children and unemployment benefits, in contrast, diminished it.

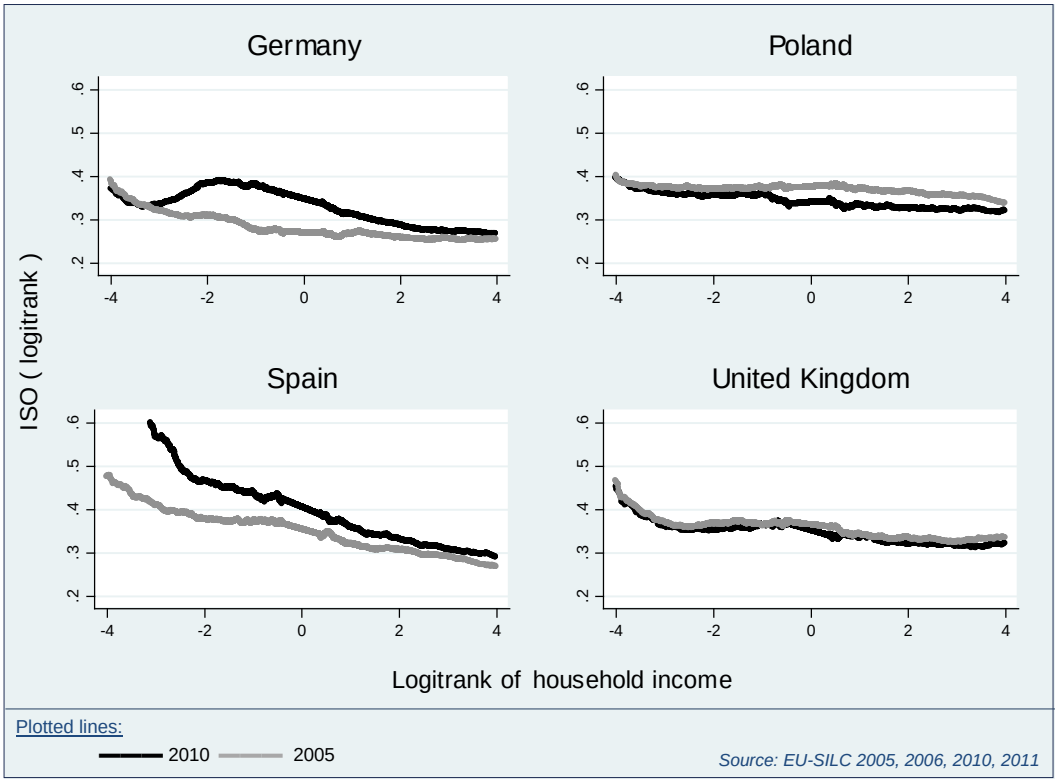
The ISO-graphs in Figure 1 visualise the results of the analysis and clarify how changes in alpha, beta and gamma translate into changing income rankings of households. Graph 1 compares actual household income inequality in 2010, plotted as black lines, with those of 2005, shown as the grey lines. The ISO graph plots empirical deviations from the CF distribution of income quantiles. Without these deviations, the plotted lines would be flat lines with varying intercepts. Higher values of ISO on the y-axis indicate higher inequality at a particular point on the x-axis, which represents the logit of the income quantile. Inequality here is understood as a stronger “stretching out” of the distribution compared to the median.

Table 2: Re-weighting of ABG using DFL procedure: Factual and counterfactual coefficients

	Alpha	*95% conf. min*	*95% conf. max*	beta	*95% conf. min*	*95% conf. max*	gamma	*95% conf. min*	*95% conf. max*	R^2
Germany										
factual 2010	0.3506	0.3504	0.3509	-0.0990	-0.0998	-0.0982	0.0133	0.0116	0.0151	0.9992
number of adults as in 2006	0.3464	0.3460	0.3468	-0.1007	-0.1018	-0.0995	0.0340	0.0316	0.0364	0.9984
number of children as in 2006	0.3346	0.3343	0.3348	-0.0887	-0.0895	-0.0879	0.0410	0.0394	0.0427	0.9993
work intensity as in 2005	0.3427	0.3424	0.3430	-0.0925	-0.0934	-0.0917	0.0349	0.0331	0.0366	0.9991
unemployment benefits as in 2005	0.3121	0.3118	0.3123	-0.0642	-0.0648	-0.0636	0.0555	0.0543	0.0567	0.9995
disability benefits as in 2005	0.3450	0.3447	0.3452	-0.0963	-0.0972	-0.0954	0.0383	0.0363	0.0402	0.9990
factual 2005	0.2669	0.2667	0.2671	-0.0027	-0.0035	-0.0019	0.0572	0.0559	0.0584	0.9993
Poland										
factual 2010	0.3387	0.3385	0.3388	-0.0167	-0.0171	-0.0163	0.0270	0.0264	0.0276	0.9998
number of adults as in 2006	0.3316	0.3314	0.3317	-0.0078	-0.0082	-0.0075	0.0350	0.0346	0.0355	0.9999
number of children as in 2006	0.3270	0.3269	0.3271	-0.0058	-0.0061	-0.0055	0.0344	0.0340	0.0348	0.9999
work intensity as in 2005	0.3281	0.3280	0.3282	-0.0052	-0.0056	-0.0049	0.0398	0.0394	0.0403	0.9999
unemployment benefits as in 2005	0.3286	0.3284	0.3287	-0.0069	-0.0073	-0.0066	0.0432	0.0428	0.0437	0.9999
disability benefits as in 2005	0.3233	0.3231	0.3234	-0.0098	-0.0100	-0.0095	0.0356	0.0352	0.0360	0.9999
factual 2005	0.3748	0.3747	0.3749	-0.0217	-0.0221	-0.0213	-0.0078	-0.0083	-0.0073	0.9999
Spain										
factual 2010	0.3688	0.3569	0.3807	0.0115	-0.0277	0.0508	0.3398	0.2513	0.4282	0.7354
number of adults as in 2006	0.4154	0.4120	0.4187	-0.0724	-0.0835	-0.0613	0.1656	0.1408	0.1905	0.9787
number of children as in 2006	0.3920	0.3774	0.4066	0.0219	-0.0265	0.0702	0.3410	0.2313	0.4506	0.7093
work intensity as in 2005	0.3936	0.3919	0.3953	-0.0510	-0.0566	-0.0455	0.1271	0.1152	0.1389	0.9898
unemployment benefits as in 2005	0.3613	0.3366	0.3859	0.1188	0.0369	0.2006	0.6872	0.5005	0.8738	0.5735
disability benefits as in 2005	0.4106	0.4090	0.4123	-0.1028	-0.1083	-0.0973	0.1838	0.1712	0.1963	0.9919
factual 2005	0.3506	0.3503	0.3509	-0.0667	-0.0678	-0.0656	0.0505	0.0483	0.0526	0.9992
United Kingdom										
factual 2010	0.3502	0.3499	0.3506	-0.0410	-0.0420	-0.0400	0.0131	0.0110	0.0152	0.9994
number of adults as in 2005	0.3652	0.3646	0.3658	-0.0516	-0.0533	-0.0499	0.0073	0.0039	0.0107	0.9991
number of children as in 2005	0.3576	0.3571	0.3581	-0.0461	-0.0476	-0.0445	0.0099	0.0065	0.0132	0.9994
work intensity as in 2005	0.3610	0.3605	0.3615	-0.0509	-0.0525	-0.0493	0.0123	0.0090	0.0156	0.9994
unemployment benefits as in 2005	0.3258	0.3252	0.3264	-0.0159	-0.0177	-0.0141	-0.0012	-0.0046	0.0023	0.9989
disability benefits as in 2005	0.3496	0.3490	0.3502	-0.0418	-0.0437	-0.0400	0.0066	0.0027	0.0106	0.9991
factual 2005	0.3597	0.3595	0.3600	-0.0402	-0.0410	-0.0394	0.0117	0.0101	0.0133	0.9996

Source: EU-SILC 2005, 2006, 2010 and 2011

Figure 1: Change of local inequality between 2005 and 2010



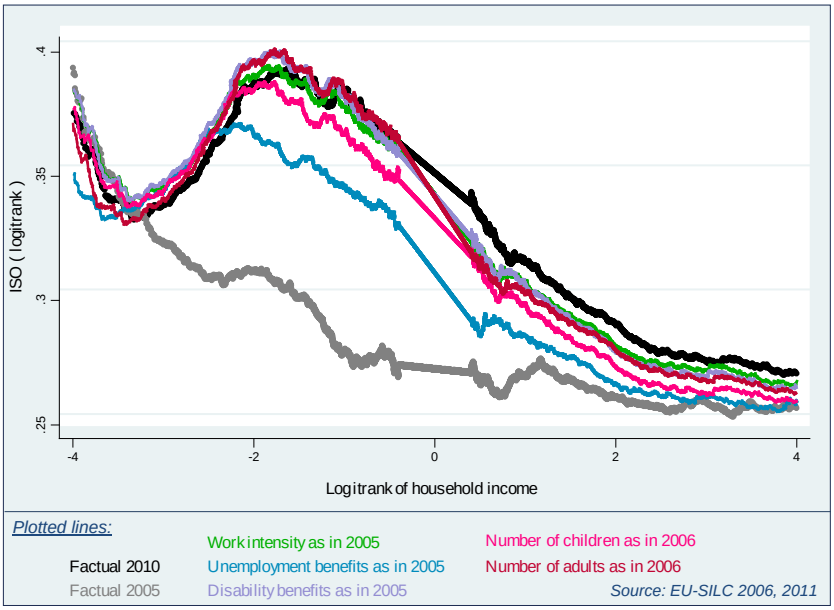
Note: Household income refers to equivalised disposable income.

Figure 1 shows that Inequality increased in Germany and Spain. The increase in inequality among German households is concentrated around the middle of the distribution. The highest values are found in the lower middle ranks of household income. This picture of rising income polarisation confirms previous findings of an increasing gap between the relatively poor and rich in Germany due to a shrinking middle class (Grabka and Goebel 2014). Spain, in contrast, shows a pattern of strong differences between the very rich and very poor. This difference has become more extreme between 2005 and 2010 due to higher inequality in the lower ranks of the distribution. Inequality decreased, in contrast, among Polish households. While this is true for the entire distribution, middle and high incomes profited the most from this development. Finally, the United Kingdom stands out as a case of very little change. Overall, the graph suggests a weak tendency towards decreasing inequality among households.

In Figure 1, the axes were harmonised for the sake of comparability across countries. Across Figures 2 to 5, the scales of the y-axes are allowed to vary in order to enhance readability. These graphs address the counterfactual results obtained by the DFL re-

weighting procedure and are therefore more complex. Along with the lines for 2005 and 2010 that are identical to those in Figure 1, five additional lines are plotted that are the re-weighted versions of the 2010 line. A re-weighted line represents the counterfactual case if the distribution of one variable had not changed since 2005-2006, while all other variables are kept constant on the 2010/2011 level. It is important to note that these counterfactuals are not to be interpreted as causal effects of the re-weighting variables. In the following, the term 'effect' will refer to descriptive results about the contribution of distributional changes in one variable to changes in the distribution of another. This does not account for possible unobserved confounders and complex interaction structures with and among control variables. Despite of this caveat, the counterfactual graphs are nevertheless informative and helpful in gaining knowledge about how inequality is shaped by different aspects.

Figure 2: Germany, counterfactual results



Note: Household income refers to equivalised disposable income.

Figure 2 presents the counterfactual results for Germany. The graph shows that inequality would be slightly higher among poorer households, and slightly lower for middle-to-high income groups if the work intensity of households hadn't increased and the number of children hadn't dropped over the studied time period. Both developments thus had a weak equalizing effect. The effects of the number of adult household members and of disability benefits point to the same direction, but are more pronounced for lower incomes: Holding everything else constant, without shrinking household size

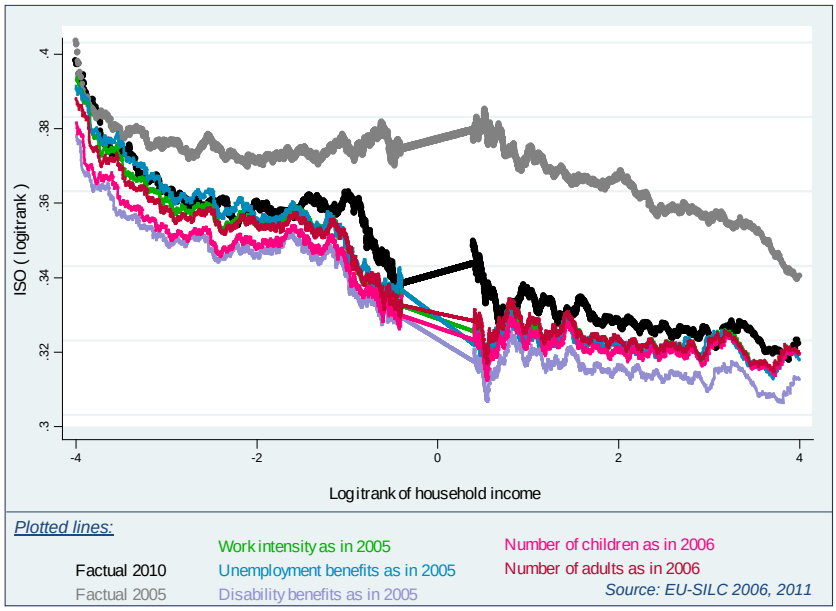
and changing distribution of sickness or disability benefits, inequality would be higher among low-to-medium incomes and lower among medium-to-high incomes. Unemployment benefits take an outlier position both in terms of magnitude and direction of impact. If the probability of receiving unemployment benefits had not changed since 2005, the distribution of household incomes would, ceteris paribus, be much flatter: Inequality would be slightly higher for the very poor but considerably lower for the remaining income groups. Distributional changes in this type of benefit thus had an important disequalizing impact on household income rankings, even if changes in household employment, size and other benefits are controlled for. This can have several reasons. The year 2005 represents a phase of institutional transition in which a new system of unemployment benefits was installed (see Introduction in this paper). Unemployment rates peaked, which was partly a continuation of a trend on the German labour market and partly due to the large-scale re-categorisation of the nonemployed population. Insurance claimants were partly only affected by the reform in 2006, when the maximum duration of their payments was restricted to 12 months for those younger than 55 and 18 months for those above this age. In 2008, benefit duration was extended again to 24 months for persons older than 58 (Hochfellner, Hofmann and Wolf 2016). Nevertheless, the 2005 data should include more households with insurance claims than that referring to 2010. In later years, older and long-term unemployed persons were more likely to receive flat-rate assistance benefits.

These institutional changes, in combination with subsequent economic growth led to a decrease in the percentage of short-term insurance claimants among all unemployment benefit claimants. This created sharper contrasts between household incomes of short-term and long-term benefit recipients. While insurance benefits are wage-related and allow for additional benefits and earnings by other household members, assistance is flat-rate and means-tested against most other household incomes (Dingeldey 2011). Additional reasons for rising inequality in lower income groups may be the increase in part-time jobs, atypical employment and low-paid jobs between 2005 and 2010. Until 2015, Germany did not have a general statutory minimum wage[111] but offered top-up benefits for households under a certain income threshold. At the same time, earnings exemptions in the means-test of unemployment assistance encouraged the take-up of marginal employment in order top up benefits (Eichhorst 2012). Together with the

[11] Germany introduced a minimum wage in 2015 (BMAS 2015)

general increase in low wages and work hours, this may have resulted in higher inequality within lower income groups, between those eligible for combination benefits and those who were not or did not make use of it.

Figure 3: Poland, counterfactual results

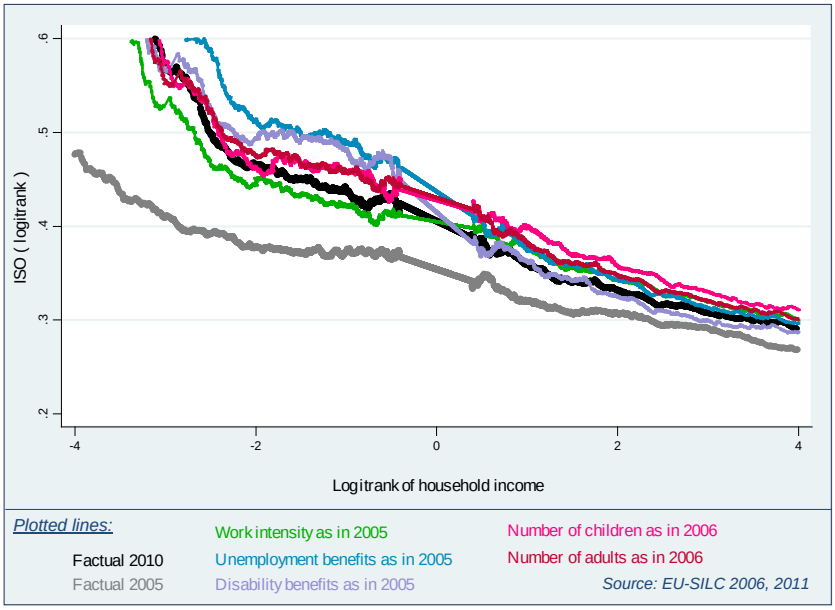


Note: household income refers to equivalised disposable income.

Figure 3 shows the Polish development of decreasing inequality among all income groups. The biggest improvements can be seen in medium-to high incomes. Inequality among the poor is thus still relatively high and decreasing faster for those who are higher up on the income scale. The main result of Figure 3 is that the observed changes in household welfare characteristics did not contribute to this trend. If households' work, benefit and family situations had not changed since 2005 and 2006, inequality would have decreased even more. The only exception is unemployment benefit receipt in the lowest income quantiles. As these benefits are highly targeted, the drop in benefit claims affected mainly the lowest incomes. Without this drop, inequality would be slightly higher for these groups. Overall, however, the socio-economic and demographic changes in Polish households had disequalizing effects which were offset by other factors which are not captured by this analysis. These factors could be related to the overall growth in GDP and wages and may also reflect incomes that come from abroad: With the accession of Poland to the EU, an increasing share of Polish citizens moved to work in other EU countries, leading to an increased amount of income transfers to Polish households from their family members abroad. While in the past, such

opportunities were restricted to seasonal and temporary work contracts for many citizens from Central and Eastern European countries, the admission to the Schengen treaty increased the share of better, higher paying jobs and long-term emigration (Chmieliński 2013).

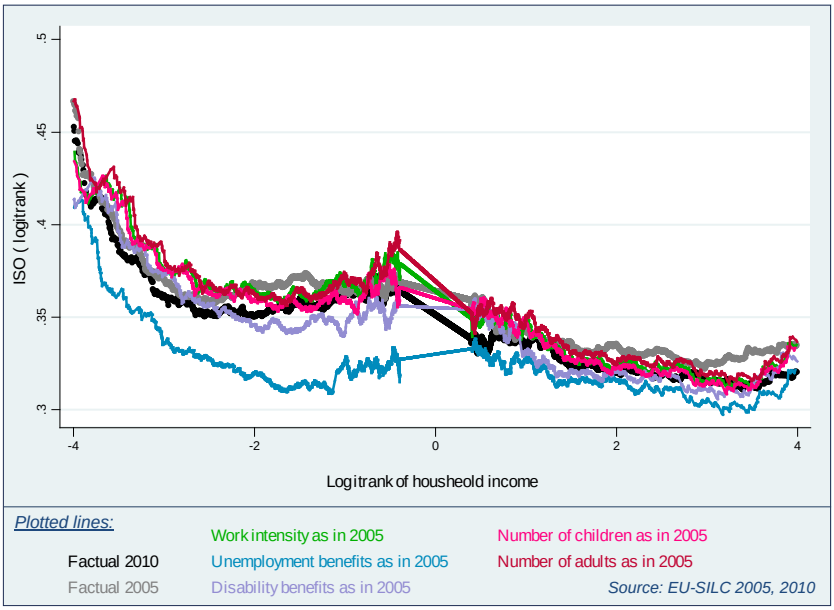
Figure 4: Spain, counterfactual results



Note: household income refers to equivalised disposable income.

In Spain, as in Poland, inequality is higher among poorer households (see Figure 4). But in contrast to the Polish case, the level is much higher and the situation worsened between 2005 and 2010. The green line shows clearly that inequality would be less severe in the lower and more pronounced in the higher income groups if the distribution of work had remained as in 2005. The recession that hit Spain harder than many other countries certainly contributed to this result. However, studies of the Spanish case indicate substantive levels of dualisation in employment and social protection already before 2008 (Häusermann and Schwander 2012) It is possible that this structural divide between labour market insiders and outsiders made poorer households more vulnerable to the impact of the recession while higher income ranks were less affected. Changes in the distribution of benefits buffered this effect to some extent. Another 'buffer' came in the form of a dramatic drop in household size (cf. Table 1), especially for the middle class and the richer end of the distribution.

Figure 5: United Kingdom, counterfactual results



Note: household income refers to equivalised disposable income.

Figure 5 presents the results for the United Kingdom. As seen in Figure 1, inequality decreased slightly between 2005 and 2010. The strongest effect can be seen for unemployment benefits. Holding the other factors constant, inequality would be lower in 2010 if the distribution of this benefit hadn't changed since 2005. The same can be said to some extent for sickness and disability benefits. It is possible that these results are caused by socio-structural shifts within benefits caused by welfare reforms. With the introduction of the Employment and Support Allowance in 2008, different benefit levels were defined for claimants with partial and full disability (see Introduction in this paper), and long-term benefit receipt for people with partial work ability became more difficult. Another path of reforms in the United Kingdom is the gradual reduction of exceptions for mothers on benefits to participate in activation programmes (Wright 2011). Both reforms may have pushed recipients from other systems into jobseeker's allowance, increase inequality among social benefit recipients and lower income groups in general. The distributional impact of the remaining variables is less clear, with a tendency towards equalizing effects. The slight increase in bigger households with more children and employed adult members therefore contributed to decreasing inequality. The results for work intensity may be related to the finding that the long-term increase of employment polarisation across households came to a halt in the early 2000s and began to drop thereafter (Corluy and Vandenbrouke, 2013).

6. Summary and conclusions

The study investigated changes in the shape of inequality in Germany, Poland, Spain and the United Kingdom. The main interest was on the impact of changes in factors that are related to the key areas of societal welfare production. For this purpose, distributional changes in household-level manifestations of the welfare triangle were analysed regarding their impact on household income inequality. These manifestations include the extent of households' labour market participation, the receipt of unemployment and disability benefits, and household size in terms of adult household members and dependent children. Labour market participation stands for the opportunities of households to gain incomes on the market, while welfare benefits indicate the extent to which states secure a certain standard of living in the absence of market incomes. Household size is an indicator for both the need and the resources to generate income. The bigger a household, the more income is needed to make ends meet. The possibility to participate in the labour market may, however, be heavily restricted by the presence of children or frail adults if care services are not available or affordable. On the other hand, the number of adults can be also interpreted as the number of potential wage earners and benefit claimants.

The overall impact of household and family structure on inequality thus depends on the overall context and the interactions between all three areas of welfare production. The distributional changes of the respective household-level manifestations were therefore analysed while keeping the other factors and a set of control variables constant. The methodological approach of the analysis combined two important methods in the field of inequality research. The Alpha-Beta-Gamma method proposed by Chauvel (2016) was chosen as core of the analysis as it offers an efficient way to empirically map the shape of income distributions. These indicators were integrated with Biewens' 2001 adaption of the well-established re-weighting technique of DiNardo, Fortin and Lemieux (1996). This procedure generated a set of factual and counterfactual indicators and ISO-graphs that visualised the effects of changes in household-level welfare indicators on the distribution of disposable household incomes.

The descriptive investigation of the household-level variables found and increase in household work intensity in Germany, Poland and the United Kingdom but a strong decrease in Spain. Household size was shrinking in Spain and Germany. Fertility is also

dropping in both of these countries and in Poland. The United Kingdom stands out with slight increases in household size and number of children. Changes in benefits were rather minor in Britain while they were more substantial in Germany, Poland and particularly in Spain. There are thus some similarities between the countries concerning the development of single indicators. Looking at their combination, though, reveals four distinct trajectories. The comparison of the four countries' factual ISO-curves for 2005 and 2010 additionally highlights the difference between them: Their initial levels and shapes of inequality varied as much as the pattern and magnitude of change. Germany is marked by a polarisation of incomes with rising inequalities at the middle of the distribution. Spain shows a strong and increasing contrast between high inequality among the poor and lower levels for the rich. Poland can be interpreted as opposite case with a very constant level of inequality across the distribution. The curve of the UK is also flat except for the lowest income ranks.

In the counterfactual analysis, the contribution of changes in household-level welfare factors to developments in national inequalities was investigated on a country-by-country basis. The increase in household employment had equalizing effects in Germany, Poland and the United Kingdom. Decrease contributed to rising inequalities in Spain. This was partly cushioned by unemployment benefits. The opposite was found in Germany, where changes in the probability of receiving unemployment benefits increased inequality from the lower-middle ranks of the income distribution upward, to a larger degree than other factors decreased it. For the lowest ranks of income in Germany, but also in Poland, changes in unemployment benefits reduced local inequalities. Changes in disability benefits had a tendency to reduce inequalities in all countries except Poland. Changes in household composition are very diverse, both between countries and along the income distribution. In Spain, for example, they seemed to have dampened the impact of the crisis for the middle and upper classes at the price of reduced union formation and fertility. In Poland, fewer children per household seem to have shifted the entire distribution upward and in Germany, decreasing fertility contributed to the trend of increasing income polarisation.

The results show how different elements of the welfare triangle shape income distributions differently according to their unique combination in different countries. The ISO-graphs are, however, also informative in what they do not show: In all cases, a considerable gap remains between the re-weighted curves of 2010 and the factual

distribution of 2005. This indicates that there are a number of influences on inequality that have not been captured by this analysis. Possible candidates could be changing wage structures or capital incomes. Changes in migration patterns and transnational inter-household transfers may also play a role. Other factors that could alter the income ranking of households include welfare state institutions that have not been observed here, e.g. changes in the availability of care services and benefits for children and for the elderly, or reforms of the tax system. Investigating their impact on the entire shape of inequality using ABG would be an interesting path to follow.

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