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To explain single-mother poverty, existing research has either emphasized individualistic, or contextual explanations. Building on the prevalences and penalties framework (Brady et al. 2017), we advance the literature on single-mother poverty in three aspects: First, we extend the framework to incorporate heterogeneity among single mothers across countries and over time. Second, we apply this extended framework to Germany, the United Kingdom and Sweden, whose trends in single-mother poverty (1990–2014) challenge ideal-typical examples of welfare state regimes. Third, using decomposition analyses, we demonstrate variation across countries in the relative importance of prevalences and penalties to explain time trends in single-mother poverty. Our findings support critiques of static welfare regime typologies, which are unable to account for policy change and poverty trends of single mothers. We conclude that we need to understand the combinations of changes in single mothers' social compositions and social policy contexts, if we want to explain time trends in single-mother poverty.

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Acknowledgements: The research leading to these results has received funding from the European Union"s Horizon 2020 research and innovation programme under grant agreement No 730998, "InGRID-2 – Integrating Research Infrastructure for European expertise on Inclusive Growth from data to policy". The funding facilitated short-term research stays at the Institute for Socio-Economic Research (ISER) at the University of Essex (Hübgen) and at the Swedish Institute for Social Research (Hübgen, Zagel). We are very grateful to our colleagues there who shared their valuable data expertise and constructive feedback with us. Grants from the Swedish Research Council for Health, Working Life and Welfare supported Nieuwenhuis [2018-00988] and access to the HEK data [2012-0995]. Nieuwenhuis acknowledges the work by Susanne Alm and Kenneth Nelson on preparing earlier versions of the Swedish data. This article also benefitted substantially from remarks and comments from numerous colleagues at our home institutes and at international conferences, as well as by several careful reviewers and the editor of Social Forces.

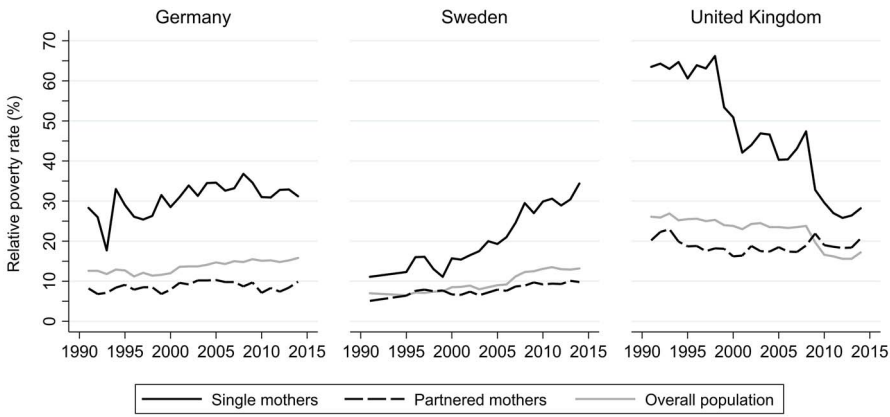
Social Forces 1–33
https://doi.org/10.1093/sf/soab142

Introduction

Poverty rates of single mothers are commonly high, but vary strongly across industrialized countries (OECD 2021). The literature documents how the welfare state can reduce poverty among single mothers, such as by providing financial transfers to families or childcare services that support mothers' employment (Brady, Finnigan, and Hübgen 2017; Brady and Burroway 2012; Huber et al. 2009; Hübgen 2018, 2019; Maldonado and Nieuwenhuis 2015; Misra, Budig, and Moller 2007; Misra et al. 2012). However, this research has been unable to explain the trends and comparative patterns in single-mother poverty rates in recent decades. For example, trends in Germany, Sweden, and the United Kingdom contradict established welfare regime logics: single-mother poverty rates more or less stagnated at around 30 percent with a slight increase in Germany, while they saw a strong increase from just above 10 percent in the early 1990s to over 30 percent by 2015 in Sweden, and sharply decreased from over 60 percent in the 1990s to just under 30 percent in 2014 in the United Kingdom (see figure 1).

Policy-oriented studies have so far mostly overlooked the role of single mothers' sociodemographic composition for determining their poverty levels. McLanahan's (2004) narrative of sociodemographic change as a driver of social inequality features this perspective. Research in that line of thinking emphasizes changes in individual-level demographic behaviors as explanation for single mothers' disadvantaged position (McLanahan 2004; McLanahan and Percheski 2008). Single motherhood is seen to be increasingly linked to low socioeconomic resources such as in education and (un)employment in many countries. In contrast to the comparative social policy literature (e.g. Lewis

Figure 1. Poverty trends (1991–2014) in Germany, Sweden and the United Kingdom by family type



Data: GSOEP, BHPS/UKHLS for Germany and the United Kingdom, own calculations. Sweden: Statistics Sweden (2017). Notes: Poverty: 60% of median disposable equivalized income, single mother: mother with at least one own minor child in HH, no partner (see section on measurement for further details)

and Hobson 1997; Misra et al. 2012; Nieuwenhuis and Maldonado 2018), this research mostly considers policies as background factors to demographic processes, which may for example incentivize (in)stability of marriage or fertility behavior (McLanahan and Jacobsen 2015).

In this article, we reconcile contextual explanations from the comparative social policy literature with demographic explanations, and argue that both are necessary to make sense of the trends in single-mother poverty in Germany, Sweden, and the United Kingdom since the 1990s. We build on recent work that allows to incorporate both perspectives, namely the prevalences and penalties framework (Brady et al. 2017; Laird et al. 2018; for an equivalent approach see: Kessler, 1979). In this framework, poverty rates are understood to be the result of (a.) how prevalent individual-level risk factors for poverty are (such as single motherhood, unemployment, or low education), and (b.) how strongly these are empirically associated with poverty (the "penalty"). Although the framework has originally been used for decomposing and explaining population-level poverty rates, we demonstrate it is well-suited for studying the diverging poverty trends of single mothers as a subgroup across different welfare state contexts.

The first contribution of our study is to broaden the application of the prevalences and penalties framework by adopting it to the group of single mothers. We incorporate the idea that single mothers themselves represent a heterogenous group where different risk factors can cumulate (Zagel, 2014). Accordingly, in line with the sociodemographic perspective (McLanahan 2004), we argue that variation in characteristics such as the education and (un)employment of single mothers (prevalences) across contexts partly explains trends in poverty rates of single mothers over time. In addition to these prevalences, we consider the poverty penalty of risk factors: for example, although single mothers in almost all countries are more likely to be lower educated than mothers in couples, the association of education with poverty varies (Brady, Finnigan, and Hübgen 2017; Härkönen 2018, 2017).

Second, we study changes in prevalences and penalties of risk factors among single mothers in a case-oriented comparative design of three vastly different welfare state contexts, i.e. Germany, Sweden, and the UK. Case selection was based on the mismatch between conventional regime-based understandings on the one hand, and the observed poverty trends of single mothers (figure 1) on the other hand: contradicting expectations about single mothers' position in Germany's strong male breadwinning support system, Sweden's alleged most equalizing welfare state, and the UK's weakest safety net for single mothers. The case-oriented design allows us to provide a context-specific description of the profound changes these welfare states have witnessed in the past decades, and to relate them to how risk factors among single mothers have become more or less penalized over time.

Third, our approach allows for the possibility that the relative importance of poverty explanations based on individual-level characteristics and contextual conditions varies across contexts. Not only can we contribute to a better understanding of whether changes in single-mother poverty have to be seen

primarily as a result of how policies shifted in a particular context, or whether sociodemographic shifts were more important. But the comparative design also allows us to consider which type of explanation is most suitable where and when.

We address the question to what extent the diverging trends in poverty among single mothers in Germany, the United Kingdom, and Sweden can be explained by changes in (1) the prevalence of individual characteristics and (2) the penalties associated with those characteristics. Our empirical approach is standard decomposition analysis. We use large-scale survey data covering a long time window from the German Socio-Economic Panel (1990–2014), the Swedish Household Economy database (1990–2009), and the British Household Panel Survey and its successor study (1991–2014). This observation window was chosen in accordance with when major policy reforms in these countries took place. Our findings reveal that no single type of explanation suffices to explain these poverty trends, and that a combination of perspectives is required: The prevalences of individual-level characteristics (social composition) were responsible for changes in single-mother poverty in Sweden and the United Kingdom, but not in Germany. Further, penalties were decisive for the poverty increase in Sweden and the decrease in the United Kingdom, but negative and positive trends in penalty effects in Germany seem to have outbalanced each other. Our findings call for integrating perspectives of demographic and welfare state scholarship more for understanding poverty trends over time, and demonstrate the use of the prevalences and penalties framework for doing so.

Theoretical Framework

In this section, we outline our comparative framework for explaining poverty trends of single mothers and derive hypotheses for our three study countries. We conceptualize individual and contextual explanations for time trends in single-mother poverty, building on a framework developed by Brady, Finnigan and Hübgen (2017). For explaining differences in poverty risks on the population level, Brady et al. (2017) distinguish between the prevalence of risk factors for poverty (i.e. how common risk factors are) on the one hand, and the penalty of these risk factors (i.e. how strongly they are associated with poverty) on the other. A key assumption is that the association between the risk factors and poverty is crucially (although not necessarily) shaped by structural and institutional factors such as labor markets and policies.

Instead of examining the effects of different risk factors for poverty in the population (i.e. young age, single motherhood, low education, and unemployment) as done by Brady et al. (2017), we elaborate on their framework by zooming into one of their "risk factors": single motherhood. In the following, single motherhood is hence the "baseline risk", and will not be referred to as risk factor in our study. As shown by previous studies, countries differ in how risk factors (e.g. low education, unemployment, marginal employment) cumulate among the subgroup of single mothers, and in how large the penalties are for these factors. Analyzing single mothers' individual characteristics in terms of prevalence and

penalties across countries and also over time allows to assess demographic and policy explanations for poverty trends.

The following sections outline our framework, considering (1) changes in the prevalence of risk factors among single mothers (individual-level explanation), and (2) changes in the association between risk factors and poverty primarily (although not exclusively) induced by policy settings (contextual explanation). We consider these explanatory factors as interrelated and their effects on single-mother poverty not to be viewed in isolation. This also means that our expectations formulated in the hypotheses are not exclusive. It could be, for instance, that single-mother poverty is reduced by the favorable development of individual risk factors, but that policy retrenchment hampers any reduction of poverty.

Individual Risk Factors among Single Mothers

The dominant explanations for how single-mother poverty develops over time are based on individual-level arguments. McLanahan's (2004; McLanahan and Jacobsen 2015) diverging destinies hypothesis captures this strand of explanation. The observation is that poverty increases and consolidates for single mother families, because family instability concentrates among those with lower market endowments, who are already at a disadvantage compared to stable two-earner households. To the extent that single motherhood was an increasingly socially selective phenomenon, we would be able to explain changes in poverty rates of single mothers with the changing individual characteristics reflected in the social composition of the group. That means that, if the individual characteristics associated with poverty are prevalent among the group of single mothers, their overall poverty is also high. Such characteristics are typically low education, low employment intensity, young age of the mother, having young children, and multiple children in the household.

Few studies explicitly examine the social composition of single parents and its development over time, much less in a comparative perspective. McLanahan and Jacobsen (2015) compile results from studies showing trends in associations between demographic events and socioeconomic status, including the social gradient in single motherhood in the United States. Although their review also reports results from other countries, it does not provide a systematic comparison. Härkönen (2018) takes a comparative perspective on the educational composition of single mothers, but looks at one time point. He finds strong country differences in the group composition of single mothers by educational attainment. For example, the share of single mothers with low education was particularly high (>30 percent) in the United Kingdom, but much lower in Germany (20 percent) in the 2000s. For Germany, Boehle (2019) describes compositional changes for poverty of single parents (about 90 percent of which are mothers) since the 1980s. She shows that employment intensity of single parents has decreased steadily since the mid-1980s, and the share of single parents with young children (<3 years) has developed in a reversed U-shape with a peak in

the 1990s. Further, educational attainment levels and single parents' average age have actually increased. Overall, compositional changes among single parents in Germany seem to have outbalanced each other across this time period, with gains in education pointing to a possible moderating effect on poverty risks.

Research on single mothers in the United Kingdom has not considered social composition as an explanatory factor as such, but studies confirm the disadvantageous socioeconomic characteristics of single mothers (Chambaz 2001; Rowlingson 2001; Rowlingson and McKay 2005). More recent studies showed that single mothers in the United Kingdom, although remaining a group with low average education (Taulbut, McCartney, and Davis 2016), have increased their employment intensity throughout the 2000s (Harkness 2016). In light of these developments, compositional changes among single mothers in the United Kingdom should have reduced poverty risks.

Research on single mothers in Sweden has also not commonly focused on social composition as an explanation for socioeconomic disadvantage. An exception is Gähler (2004), who shows that single mothers have for long had lower incomes than mothers in couples. The relatively favorable economic position of single mothers in Sweden compared to other countries can be explained by the generous social security system, but also with their traditionally high employment rates. The situation changed during the economic crisis in the 1990s. Many single mothers lost their often insecure jobs, not least due to their overall lower education levels (Gähler 2004). Single mothers were often lacking characteristics that favor their success in the labor market, even despite their higher likelihood to be in education compared to mothers in couples (Ellingsæter and Leira 2006). Overall, the existing research seems to suggest an increasingly unfavorable composition of single mothers in Sweden over time.

> **Hypotheses 1a–c (prevalences):** (a) Changes in single-mother poverty in the observed period in Germany cannot be explained by changes in group composition. (b) Decreasing single-mother poverty in the UK can partly be explained by changes in group composition. (c) Growing poverty among single mothers in Sweden can partly be explained by changes in group composition.

The Association between Risk Factors and Poverty across Country Contexts

Building on the prevalences and penalties framework, it further matters how much risk factors are associated with poverty. Brady et al. (2017) show that policy reforms have widely been suspected to affect the prevalence of risk factors by encouraging (un)employment or young parenthood, but that evidence is weak. By contrast, policies do have a central role in determining penalties, that is, the extent to which risk factors like low education or early motherhood are related to poverty. Two key mechanisms by which policies affect poverty among single mothers are through providing income support and by supporting employment. The direct effect is often referred to as the poverty reduction associated with taxes and transfers (Huber, Stephens, Bradley, Moller, & Nielsen, 2009). Single mothers' poverty is further affected by the degree to which welfare

states invest in in-kind services (Nygård, Lindberg, Nyqvist, Härtull, 2019). Policy reforms in these areas can affect poverty trends, for example by changing support for single mothers' labor market participation or the level of transfers to which single mothers are eligible, either based on their family status or their labor market status. We now review prior research of how policy trajectories in Germany, Sweden, and the United Kingdom affected single mothers in the past three decades, in order to derive expectations about penalty effects on changes in single-mother poverty. Rather than a conventional policy analysis of one area of social policy across countries we use context-specific knowledge on how policies across different areas relevant to poverty evolved in these three countries to contextualize and inform hypotheses explaining the observed trends in single-mother poverty.

In Germany, several labor market and family policy reforms were implemented in the 1990s and 2000s, which affected single mothers' income position. Overall, the reforms included a shift away from the predominantly cash-based system of family policies to an integration of more in-kind policies and a stronger focus on employment supply. More specifically, the labor market policy reforms in 2003–2005 included elements with direct bearing for single mothers. They increased conditionality and introduced logics of labor market activation into the German unemployment benefit system. Single mothers mostly benefitted from the training components of the reforms, but less so from the workfare components (Zabel 2013). As a consequence, many single mothers work in the low-wage sector and claim social assistance benefits in the form of earnings top-ups (Achatz et al. 2013). Further, Germany saw several family policy reforms since the 1990s, which affected single mothers. First, the expansion of childcare provision was enacted with a law in 2004, also introducing the legal right for a childcare place granted to children aged one and above from 2013. Second, the 2007 parental leave reform included a measure targeted at single parents, granting to them the two additional months of paid leave reserved for the second parent if taken up jointly. Last, the 2008 reform of the maintenance scheme included the expectation of single mothers' full-time employment as soon as the youngest child reaches the age of three. Because childcare expansion became effective 10 years after the implementation of the labor market reforms, we only expect an increase in single mothers'—primarily part-time—employment (and related prevalence effect) in the most recent years of our observation window.

> **Hypothesis 2a:** The growth in single-mother poverty in Germany in the 1990s and the slow poverty decrease since can partly be explained by a failure to reduce penalties associated with nonemployment and part-time employment.

In the United Kingdom, labor market policies were also reformed in the 1990s and 2000s. Policy changes implied a stronger emphasis on workfare programs similar to the German reforms (Clasen 2011). The introduction of job seeker's allowance in 1996 included cuts in unemployment benefits in terms of duration and replacement rate (Dingeldey 2007). The New Deal reform in 1998 implemented a "work-first" and "make-work-pay" agenda in the form of minimum wage and work tax credits, as well as a family tax credit

in the name of the "war on child poverty". In the early 2000s, the United Kingdom experienced the emergence of previously unknown family-oriented policies, introducing the childcare tax credit, which pays up to 80 percent of the childcare costs for eligible households. Reforms implemented around 2008 changed voluntary elements of the New Deal into obligations. Single parents with a child aged 12, and later with a child aged 5, were now obliged to work and were pushed out of the social assistance scheme (Daly 2010; Haux 2012). In 2010, the new conservative government introduced Universal Credit, a merger of six existing tax credit systems. This reform aimed at simplifying application procedures, increasing transparency, and reducing bureaucracy (Brewer, Browne, and Jin 2012), although the actual implementation was heavily criticized for not effectively protecting insecure and low-wage workers, and low-income families in general, against poverty (Millar and Bennett 2017). The following years saw further cutbacks in income support benefits and a stronger emphasis on the family as a welfare provider. For example, the 2012 reform of the child maintenance system strengthened nonresident fathers' obligations to pay for the child. Hence, policies in the United Kingdom shifted to an employment-focused and fiscalized support system.

> **Hypothesis 2b:** The decrease in single-mother poverty in the UK since the 1990s and 2000s is partly explained by reduced penalties associated with low employment intensity.

Since the mid-1990s, Sweden has diverged from its generous welfare system in some policy areas, although family support still outperforms most other high-income countries. Overall, evidence from comparative analysis suggests that the Swedish universalist welfare state reduces single-mother poverty risks more effectively than targeting systems (Brady and Burroway 2012). Family policies are comparatively generous and continued to see some expansion throughout the 2000s (Ferrarini and Duvander 2010). Parental leave has been further extended. Childcare remains guaranteed for each child over the age of one (until compulsory school age), and is available at very low costs. In-kind policies such as these have long been supplemented by a generous cash benefit system. The period since 1990 was however marked by retrenchment of several labor market and social security policies in the Swedish welfare state. One of the main changes throughout the period was the dismantling of the generous unemployment insurance system, which has meant that income replacement was lowered for the earnings-related unemployment benefit and eligibility rules tightened for both earnings-related and flat-rate benefits (Angelin, Johansson, and Koch 2014). Single mothers were among the groups hit most by the changes (Alm, Nelson, and Nieuwenhuis 2020). Besides the cut in unemployment benefit levels, many single mothers did not qualify for—or opt in to—the unemployment insurance pillar and ended up in less generous minimum income protection schemes if they were unemployed.

> **Hypothesis 2c:** The growth in single-mother poverty in the 1990s and 2000s in Sweden can party be explained by higher penalties associated with not being employed.

Data and Methods

Data and Sample

For explaining time trends in single-mother poverty across three countries since 1990, we draw on two large-scale longitudinal survey datasets and one register database. Because our focus is on analyzing how the level of poverty of single mothers as a group evolved over time, rather than microlevel dynamics of individuals' poverty risk, we use all data as pooled cross-sections. We use the German Socio-Economic Panel (GSOEP), a multicohort study annually collecting longitudinal data on the individual and the household level since 1984 in Germany (Goebel et al. 2018). For the United Kingdom, we use data from the British Household Panel Study (BHPS) and its successor, the UK Household Longitudinal Study (UKHLS) (University of Essex, NatCen Social Research, and Kantar Public 2019) covering 1991–2014. In most parts, the UKHLS builds on the BHPS design and BHPS respondents were integrated into the UKHLS sample. There remains an information gap between the last BHPS wave (2008) and the first wave of the UKHLS (2009). Conceptually, both studies have great similarities with the GSOEP. All three studies are part of the Cross-National Equivalent File (CNEF), which facilitates comparison. The CNEF provides harmonized information on a subset of key variables (e.g. income sources or household composition) across participating countries.

The analyses for Sweden were performed on data from the Household Economy database (*Hushållens ekonomi*, HEK[1]). The HEK combines public register data with information from surveys. HEK data were collected annually by Statistics Sweden (with the exception of 1992). The variables required for the analyses in this article were available for the years 1990–2009. The benefit of using register data is that income data are registered with great levels of precision and (in Sweden) validity, and that it is possible to calculate sampling weights (related to the survey part of the data), which achieve a high level of representativeness. The survey amendments of HEK further expand the scope—especially regarding family structure and ensures a good comparability with the measurements in the German and United Kingdom data.

Our final samples consisted of single mothers between age 20 and 59 years old: 5,045 single mothers in Germany; 17,968 single mothers in the United Kingdom, and 10,774 single mothers in Sweden.

Measurements

Single mothers are defined as mothers who are living with at least one of their own minor children (0–17 years) and without a partner in the household. Other adults (such as her parents, siblings, etc.) could live there too, and they may have a partner living outside the household.

We define our dependent variable as *relative income poverty*, which is measured according to the EU at-risk-of-poverty definition: A household is at risk of being poor if its disposable income is less than 60% of the national

median equivalized[2] household income. In Germany and Sweden, the income reference period is calendar years, while we had to use monthly income in the United Kingdom due to complete missing of this variable in 2006–2008. Relative income poverty represents single mothers' income position relative to the median household income, and trends in relative poverty among single mothers could thus be related to trends in the incomes of other household types (for instance, the rise of dual-earner incomes could have increased median household incomes and hence lifted the poverty line). Therefore, we will also present descriptive evidence on anchored poverty rates, which compare incomes to the 1990 poverty line adjusted for price inflation. Anchored poverty rates show how the income position of single mothers evolved since the baseline year of 1990, but are not affected by trends among other household types.

We further consider the socioeconomic and sociodemographic characteristics most relevant for poverty: The mothers' *employment status* distinguishes between full time, part time, marginally, or not employed (including both inactive and unemployed). In the German and the United Kingdom data, this distinction is based on weekly working hours, while it is measured as the percentage of the full-year full-time equivalent (FYFTE) in the Swedish data. Hence, marginal employment is measured as 1–15 weekly hours or <40% FYFTE. Part-time employment ranges between 16 and 34 weekly hours or 40%–75% FYFTE respectively. Full-time employment is considered as working 35 and more hours per week or >75% FYFTE. Our conclusions are not affected by these differences in operationalization across countries, because our main focus is on analyzing trends within countries. *Educational qualifications* are considered according to the International Standard Classification of Education (ISCED 1997) and merged into three categories: low education (ISCED levels 1 and 2); medium education (levels 3 and 4), and high education (levels 5 and 6).

We also account for whether the mother is *younger than 30*[3] *years old*, whether one or more *children younger than three years* and whether *three or more children* live in the household (dummy variables). We further adjust for *immigration* and in Germany for *regional differences* between residents in east and west Germany. We additionally consider single mothers' *marital status* (never[4]/ever married) in Germany and the United Kingdom—this information is not collected in Sweden. We assume this indicator picks up on (the effects of) partner alimony that exists in Germany and the United Kingdom, but not in Sweden.

Analytical Strategy and Methods

We start our analyses with descriptions of the time trends in single-mother poverty and our two types of explanation across countries: shifts in prevalence of risk factors among single mothers and shifts in poverty penalties of these risk factors. In order to assess the latter, we first examine a measure of *poverty reduction associated with taxes and transfers*. We compare the "post-government" poverty rate, which is based on all income sources including social benefits and taxes, to a hypothetical "market" poverty rate, which excludes taxes and social benefits.

The lower the actual poverty rate compared to the market income poverty rate, the higher is a welfare state's ability to reduce single-mother poverty.[5] This descriptive type of analysis indicates the extent to which current transfers reduce current poverty rates, and comparing the measure across different years indicates how this poverty reduction changed.

To disentangle the relative importance of prevalence and penalties of risk factors for explaining time trends in single-mother poverty, we use decomposition analyses (Kitagawa 1955; Blinder 1973; Oaxaca 1973). Decomposition analyses are a well-established method in poverty research to investigate group differences or differences over time (Haupt and Nollmann 2014). In particular, we used a three-fold decomposition, which decomposes differences between two groups or two time points regarding an outcome of interest into three parts (Jann, 2008; for an application, see: Hogendoorn, Leopold & Bol, 2020): the effect of changes in the prevalence of risk factors, the effect of changes in the penalties associated with those risk factors, and an interaction term that assesses the joint impact of changes in prevalences and penalties. As our theoretical interest is in changing prevalences and penalties, the focus in our results section is on prevalences and penalties—with only a few references to the interaction terms where relevant. Prevalence effects identify group differences based on the prevalence of a characteristic (e.g. the share of unemployed in the group), whereas penalty effects identify the strength of the association of a characteristic and the outcome (e.g. how strongly unemployment is correlated with poverty). For each characteristic considered in the analysis a prevalence effect, a penalty effect and the corresponding interaction is calculated based on counterfactuals. This can be illustrated with a simple example: How much would single mothers' poverty have changed from period 1 to period 2, if only their unemployment rate (prevalence effect) had changed as we observed in that time-span? And respectively, the penalty effect would be: How much would single mothers' poverty have changed between period 1 and period 2, if only the association of unemployment with poverty had changed as we observed in that time-span?

In the first place, with this method we are able to interpret the prevalence effects as indicating how changes in the social composition of single mothers relate to trends in single-mother poverty. In the second place, the penalty effects reflect changes in how strongly risk factors are associated with poverty, and how much this contributed to overall trends in poverty among single mothers. Changes in the association between risk factors and poverty may have resulted from changing contextual or institutional factors, but it cannot be observed which factors specifically. However, in the results section that follows we will reflect on whether the observed changes in penalties are—broadly speaking—in line with the policy changes that informed our hypotheses.

This type of decomposition analyses comes along with further challenges. First, meaningful reference categories are key if the analysis contains many categorical variables like in our case. Following Haupt and Nollmann (2014), we choose a "typical" profile of the characteristics, because the omitted categories

cannot be differentiated from the intercepts in the compared models. Second, the results of a decomposition analysis depend on the choice of the "group" from which we take the counterfactual distribution (the so-called index problem). In our comparison of successive time periods, we define the earlier period as the "equilibrium" and the later period as the deviation from this equilibrium due to change. We divide our observation window 1990–2015 into 5-year periods. We then calculate for each pair of successive periods (1990–1994 compared to 1995–1999, etc.) the mean differences in single-mother poverty and the corresponding prevalence effects and penalty effects.

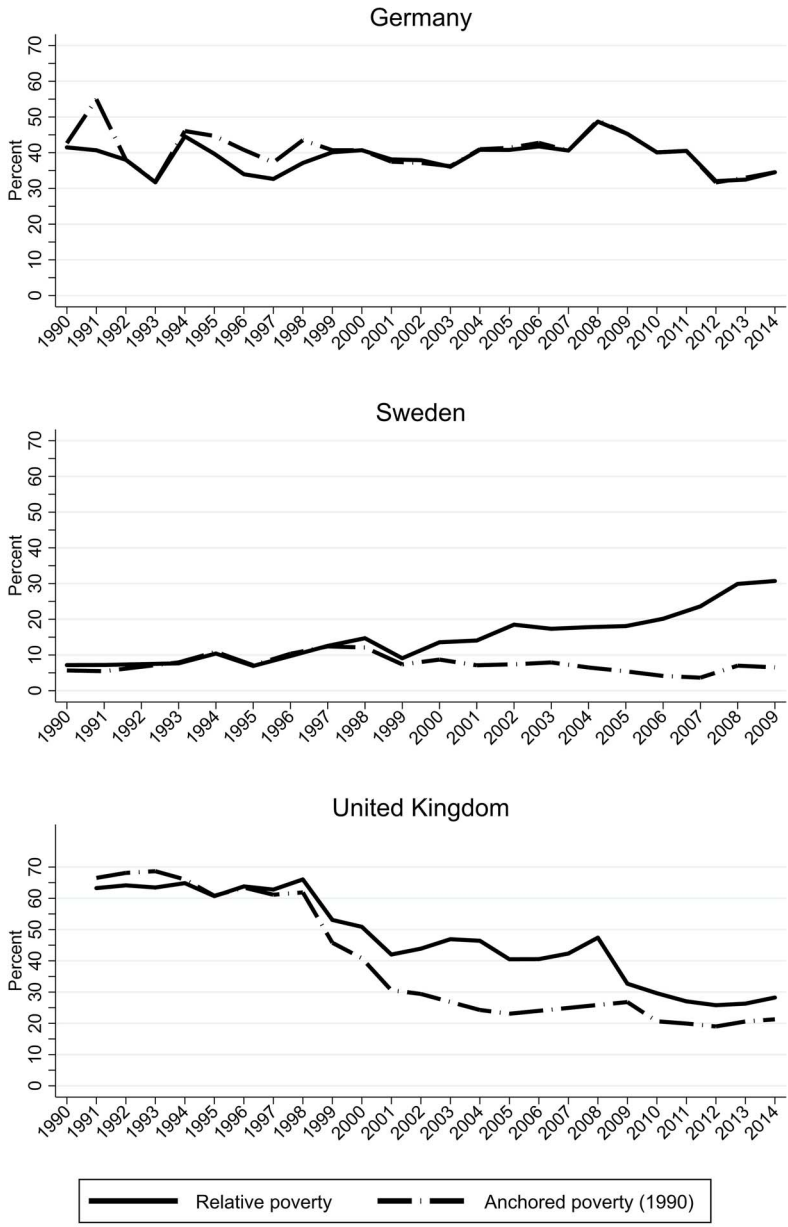
Results

In a first set of descriptive analyses, we examine three time trends: First, we elaborate on the time trends in single-mother poverty comparing relative and anchored poverty rates. Second, to detect shifts in prevalence, we examine the time trends in single mothers' social composition. Third, we approximate the shifts in poverty penalties comparing poverty reduction associated with taxes and transfers over time. The second part of the results section is dedicated to the decomposition analyses, which aim at disentangling the importance of prevalences and penalties to explain time trends in single-mother poverty.

Single Mothers' Relative and Anchored Poverty Tends

The relative poverty measure allows us to examine how single mothers fare economically compared to the overall population. However, a scenario is possible in which a larger proportion of single mothers falls into relative income poverty, even though they saw their incomes increase—just not enough to keep up with rising median household incomes. To address this, anchored poverty compares observed incomes to a poverty line in a given reference year (the "anchor"), adjusting this poverty line only for changes in prices. As the anchor, we take the relative poverty line in 1990/1991 and multiply this poverty line by the consumer-price index for the subsequent years. Figure 2 illustrates the time trend in single mothers' relative and anchored poverty across Germany, Sweden, and the United Kingdom. In the United Kingdom and Germany, the time trends in single mothers' relative and anchored poverty are almost identical. In the United Kingdom, this meant that the situation of single mothers improved relative to other households, and in Germany the situation of single mothers remained more or less constant over time on both accounts.[6] In Sweden, however, relative and anchored poverty start to diverge in 2000: Although the increase in relative income poverty indicates that more single mothers fell substantially behind median household incomes, the (slight) decline in anchored poverty suggests that fewer had incomes below the (consumer-price adjusted) poverty line of 1990/1991.

Figure 2. Time trend in single mothers' relative and anchored poverty



Data: GSOEP, BHPS/UKHLS, HEK (1990–2014). Own calculations

Changes in Group Composition

In a second step, we examine the changes in single mothers' composition over time in Germany, Sweden, and the United Kingdom. Figure 3 (panel A–G) describes how some key socioeconomic and sociodemographic risk factors developed among single mothers over the 5-year periods between 1990 and 2014. Panel A shows how *low education* among single mothers developed in these countries since 1990: Compared to Germany (25%) and Sweden (28%), the United Kingdom had a strikingly high share (more than 70%) of low educated single mothers in the early 1990s. This points to high social selectivity of single motherhood in that period, which decreased again in the late 1990s-early 2000s and remained stable afterwards (50%). In Sweden, we also saw a decline in low education among single mothers since the early 2000s, whereas there were only minor fluctuations in Germany.

Panel B displays single mothers' shares in *part-time, marginal, and nonemployment* over time: In Germany, there was a large increase both in marginal and part-time employment among single mothers over time, but overall marginal employment played only a minor role (2–6%). In the United Kingdom, the trend for part-time employment was similar, but the underlying changes were quite the opposite: Although German single mothers used to be "labor market pioneers" with comparatively high rates of full-time employment (Jaehrling et al. 2015), they reduced their average working hours over time—especially after the labor market reforms in the mid-2000s. In the United Kingdom, by contrast, single mothers had been considered mainly as caregivers until the mid-1990s, when the New Labour government started incentivizing their labor market participation. This shift was also reflected by a decreasing share of marginally employed single mothers (from 11% to 3%). In Sweden, marginal employment was more common among single mothers than part-time employment: In our observed time period, one quarter to one third of single mothers were marginally employed compared to 10%–14% of part-time employed single mothers. Except for the temporary decrease in 1995–1999 (when nonemployment increased), there was little change in these shares over time. *Nonemployment* among German single mothers was relatively stable over time (35% in 1990–94 and 31% in 2010–14) with a short peak in the late 1990s (39%). In Sweden, we see a similar pattern of high nonemployment in the late 1990s, but on a considerably lower level (24%). By contrast, the majority (60%) of single mothers in the United Kingdom were not employed in the early 1990s. Although there was a considerable decrease in nonemployment in the subsequent periods, the share (42%) was still twice as high as in Sweden in the 2000s.

Besides these socioeconomic risk factors, single mothers' age is a further factor correlated with their risk of poverty. Panel C in figure 3 reveals that *young age* (under 30 years) became less prevalent among single mothers across all countries. At the same time, being a single mother at a young age in the period 2005–2009 was still a lot more common in the United Kingdom (24%) than in Germany

(14%) and in Sweden (8%). Single mothers in the United Kingdom also more commonly live with *very young children* (figure 3, panel E): In 1990–1994 25% of single mothers in the United Kingdom lived together with a child under three

Figure 3. Time trend in single mothers' social composition

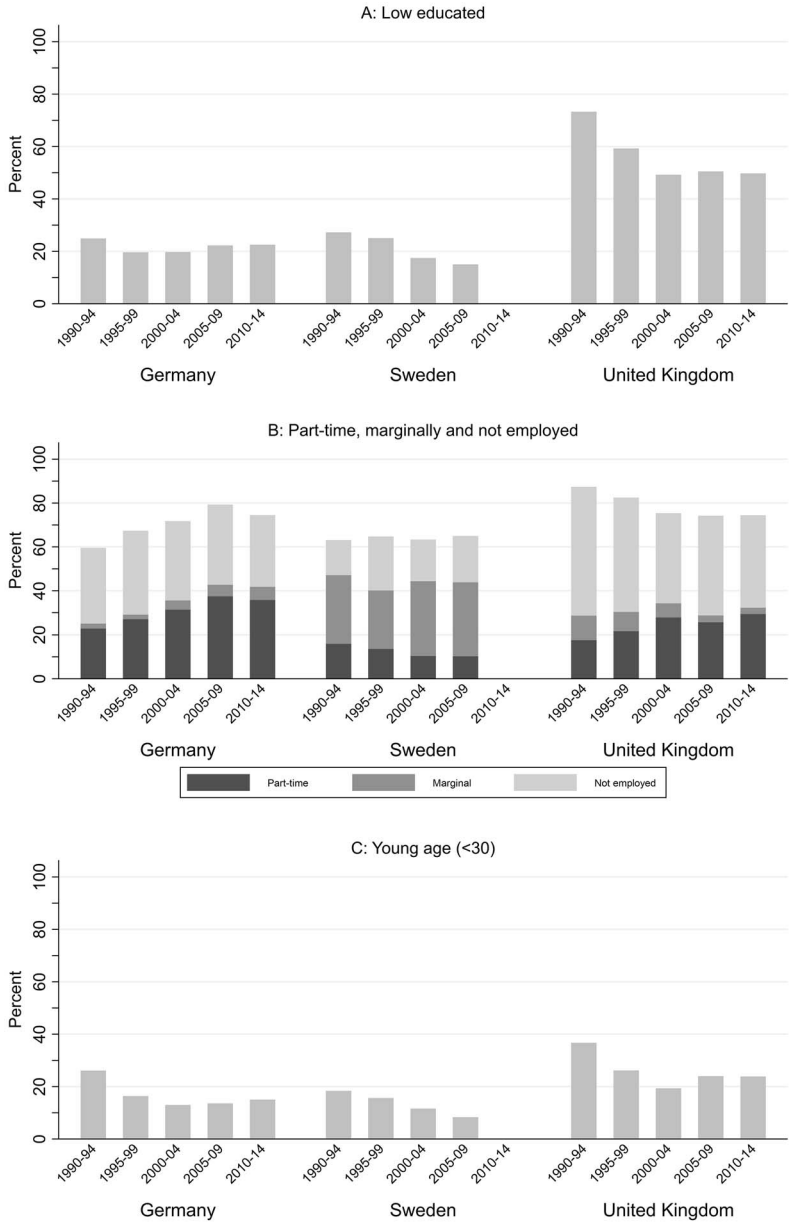
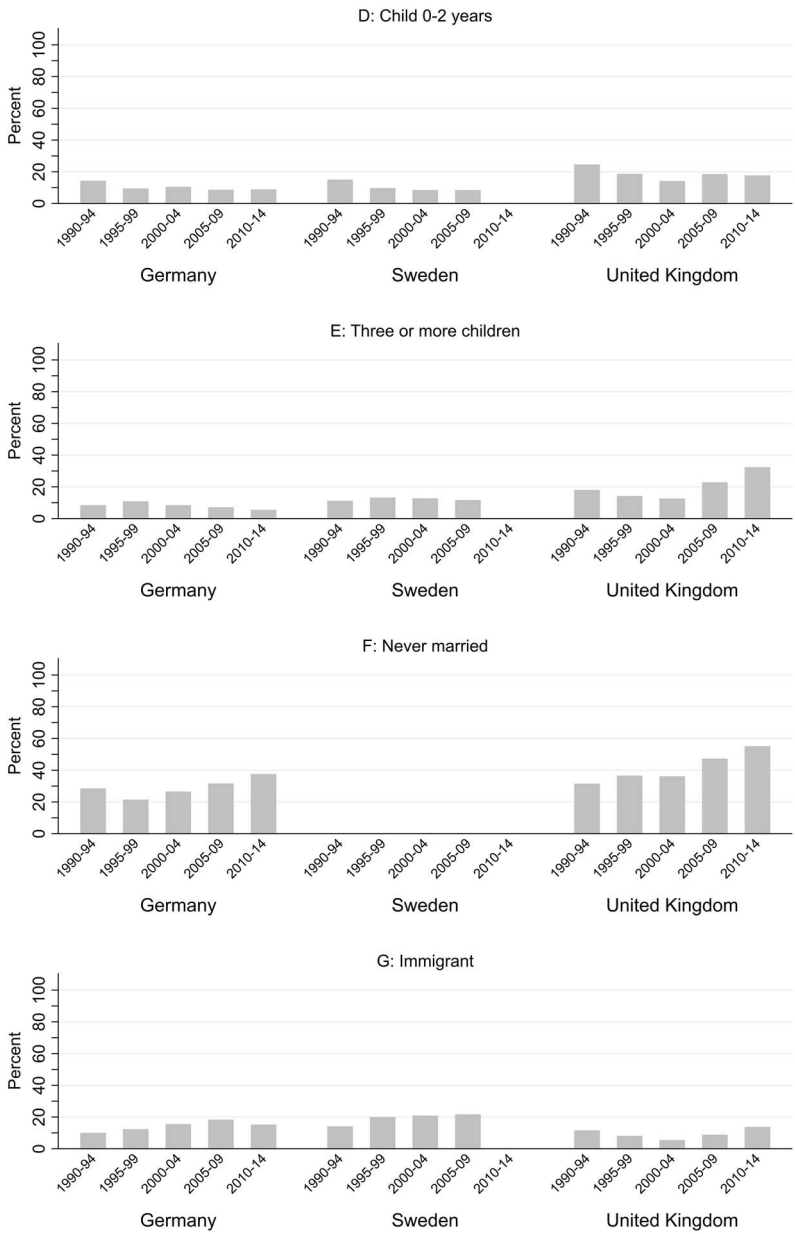


Figure 3. Continued



years, while this was only the case for about 15% of single mothers in Germany and Sweden, respectively. In all three countries, we see the same decreasing time trend, but country-differences remain stable. Moreover, in the United Kingdom,

it is more common for a single mother to live with *three or more children* than in Germany or Sweden (panel F). Although this lower share halved over time in Germany (from around 10% to 5%) and remained stable in Sweden (about 12%), in the United Kingdom it was even increasing since the early 2000s (from 18% to 32%). Panel G shows the trend in prevalences of *never married* single mothers in Germany and the United Kingdom only: Since the 1990s, never having been married became more common among single mothers to in both countries. Again, this increase has been steeper in the United Kingdom, where the share grew by 24 percentage points (compared to 9 percentage points in Germany).

Panel G in figure 3 displays the prevalence of immigrants among single mothers over time. Although there has been a continuous increase in Germany (with a peak in the mid-2000s) and Sweden, immigrant single mothers became less prevalent in the United Kingdom between 1995 and 2004. Although their share is rising again since the mid-2000s, in the most recent period fewer single mothers in the United Kingdom had an immigration background (14%) than in the two other countries (Germany 15%; Sweden 22%).

In summary, these descriptive results give some support to our first hypothesis: In Germany, we saw both an increase (marginal/part-time employment, never married, immigration) and a decrease (young age, very young or numerous children) in risk factors over time. These opposing trends could contribute to single mothers' more or less stable poverty rates over time. Sweden, by contrast, saw a dramatic increase in single mothers' poverty, although risk factors (like low education, young age or very young children) have become less prevalent over time. Hence, compositional changes may not account for the striking increase in single-mother poverty over time here. In the United Kingdom, in turn, becoming a single mother was highly selective in the early 1990s and social policies discouraged single mothers' employment. Since the labor market reforms in the late 1990s, socioeconomic risk factors among single mothers declined remarkably. Nevertheless, some sociodemographic risk factors (many children, never married, immigration) have become more prevalent. Therefore, we assume that compositional changes might account only partly for the strong decrease in single mothers' poverty in the United Kingdom.

Poverty Risks and Poverty Reduction Associated with Taxes and Transfers

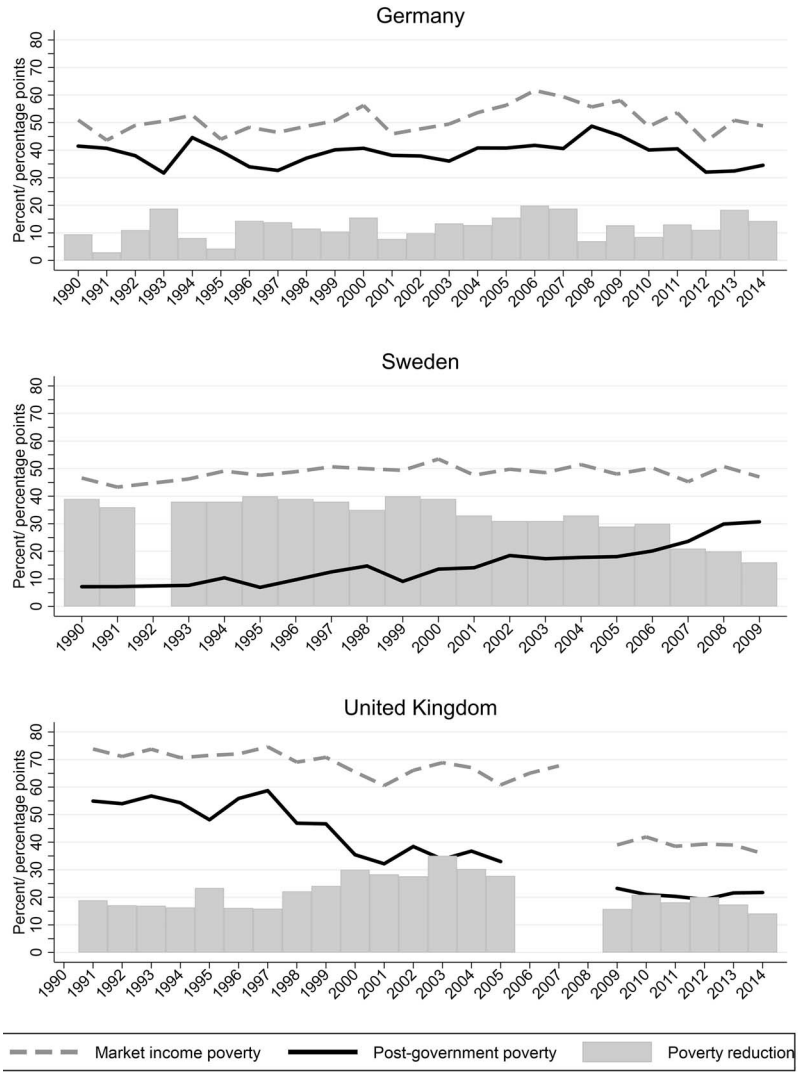
We now explore the welfare state's overall ability to reduce single-mother poverty through redistribution in Germany, Sweden, and the United Kingdom. Figure 4 shows single mothers' actual poverty rate (black solid line), their hypothetical market poverty (grey dashed line) and the difference between the two, the poverty reduction (grey bars). In Germany, in most years, monetary social benefits reduce single-mother poverty by between 10 percentage points (%pts.) and 20%pts. This indicator peaks in the early 1990s, right after German reunification; in the mid-2000s, after the introduction of the social assistance

reforms, and in 2013. Since the mid-1990s, even in Sweden around 50% of all single mothers would be affected by hypothetical market income poverty. At the same time, the Swedish welfare state is most effective in reducing market income poverty (by 40%pts. until 2000) among the three countries. However, since 2001 the redistributive capacity of the welfare state in terms of poverty reduction seems to be decreasing. In the United Kingdom, poverty reduction is low at about 20%pts. in the 1990s. However, with the New Deal policies (in particular the introduction of a national minimum wage and work tax credits) single-mother poverty is reduced by about 30%pts. compared to the hypothetical market income poverty rate. The data gap in 2006–2008 leaves some doubt about whether the ensuing decrease in poverty reduction is due to policy changes (e.g. Lone Parent Obligations introduced in 2008 or welfare state cutbacks after the Conservatives took over again in 2010), or simply because the overall poverty rates had declined. Nevertheless, these descriptive figures point to the importance of both shifts in social composition and changes in poverty reduction associated with taxes and transfers for the striking decrease in single-mother poverty in the United Kingdom.

Explaining the Time Tends in Single-Mother Poverty—Disentangling Prevalence- and Penalty Effects

The results of the decomposition analyses are presented graphically in Figure 5 and complemented by Tables 1–3. For each country and from one 5-year period to the next, figure 5 shows the difference in poverty (black dot) and the corresponding overall composition (dark grey) and penalty effects (light grey) in percentage points. In Germany, corresponding to the descriptive analyses, the differences in poverty from one period to the other are rather small, between −7 and 4%pts. Overall, penalty effects seem to be more decisive than composition effects in Germany, but none of these reaches statistical significance. In the Swedish case, we also see a rather small increase in poverty between the early and the late 1990s (+3%pts.), which can be attributed to both poverty-enhancing prevalence effects and penalty effects. In Sweden, over the whole observed period, a three-fold increase in poverty among single mothers is observed, from around 8% in 1990–1994 to 24% in the period 2005–2009, mostly attributed to penalty effects. Whereas the economic crisis that peaked around 1992 was associated with a marginal increase in poverty (to 10% in 1995–1999), the largest increase in poverty was observed between 2000–2004 (16%) to 2005–2009 (24%), a period in which conditionality was increased for unemployment benefits. The growth in poverty between the late 1990s and the early 2000s would have been even larger if there had not been favorable shifts in single mothers' social composition at the same time. By contrast, the observed differences in poverty in the United Kingdom range between −5%pts. (1990–1994 and 1995–1999) and −16%pts. (1995–1999 and 2000–2004), the latter marking the period after New Deal was introduced. Here, both prevalence and penalty effects contribute to explaining single-mother poverty trends. We will now sequentially discuss the

Figure 4. Time trend in single-mother poverty reduction associated with taxes and transfers



Data: GSOEP, BHPS/UKHLS, HEK (1990–2014). Own calculations

role of prevalence effects and then that of penalty effects respectively for each country.

Prevalence effects

First, looking at prevalence effects, these contributed to explaining changes in single-mother poverty in Sweden and the United Kingdom, but not so much in Germany. Table 1 shows that, in Germany, there is only one prevalence effect that

Table 1. Prevalence, penalty, and interaction effects by single characteristics—Germany

Period[a]	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5
	Prevalence effects				Penalty effects				Interaction effects			
Part-time employed	0.00 (0.02)	0.93 (0.19)	0.87+ (1.67)	−0.27 (−0.30)	4.42+ (1.90)	−0.75 (−0.60)	1.19 (0.58)	3.93* (2.05)	0.32 (0.45)	−0.33 (−0.35)	0.30 (0.64)	−0.06 (−0.24)
Marginally employed	−0.10 (−0.39)	0.23 (0.19)	0.26 (0.83)	−0.01 (−0.19)	−0.41 (−1.00)	0.24 (0.98)	−1.08* (−2.08)	0.61 (1.35)	0.07 (0.36)	0.74 (0.58)	−0.35 (−0.85)	0.03 (0.25)
Not employed	0.75 (0.55)	−0.77 (−0.27)	0.05 (0.05)	−2.24 (−1.39)	1.66 (0.58)	−1.86 (−1.04)	0.32 (0.14)	4.14* (2.14)	0.10 (0.43)	0.23 (0.39)	0.00 (0.05)	−0.32 (−0.54)
Low educated	−0.03 (−0.07)	0.00 (−0.02)	0.18 (0.71)	−0.11 (−0.21)	0.48 (0.24)	0.92 (0.76)	1.15 (1.04)	−1.15 (−1.09)	−0.13 (−0.24)	−0.01 (−0.02)	0.16 (0.64)	0.02 (0.20)
High educated	0.12 (0.21)	0.45 (0.16)	−0.11 (−0.29)	0.02 (0.12)	−0.17 (−0.09)	0.57 (0.51)	1.60 (1.60)	0.52 (0.55)	0.01 (0.09)	−0.16 (−0.28)	0.08 (0.28)	0.00 (−0.11)
Child 0–2 years	0.22 (0.62)	−0.03 (−0.17)	0.08 (0.60)	−0.08 (−0.13)	0.29 (0.23)	−0.22 (−0.35)	−1.51 (−1.53)	0.87 (1.13)	−0.10 (−0.22)	−0.06 (−0.23)	0.27 (0.72)	0.01 (0.13)
3 or more children	−0.07 (−0.31)	−0.07 (−0.19)	−0.11 (−0.90)	0.09 (0.56)	0.35 (0.54)	0.38 (0.63)	−0.92 (−1.36)	0.56 (1.04)	0.14 (0.50)	−0.23 (−0.35)	0.20 (0.85)	−0.08 (−0.53)
Age under 30	0.09 (0.11)	−0.23 (−0.20)	0.03 (0.33)	0.01 (0.11)	1.32 (0.52)	−0.07 (−0.09)	−0.11 (−0.14)	0.69 (0.72)	−0.49 (−0.47)	0.05 (0.09)	−0.01 (−0.13)	0.01 (0.12)
Never married	0.74 (1.15)	−0.75 (−0.20)	−0.39 (−1.27)	−0.11 (−0.42)	0.86 (0.41)	1.17 (1.03)	1.61 (1.30)	−0.22 (−0.16)	−0.13 (−0.37)	0.60 (0.60)	0.38 (1.07)	−0.02 (−0.15)

Continued

Table 1. Continued

Period[a]	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5
	Prevalence effects				Penalty effects				Interaction effects			
East Germany	0.26 (0.56)	−0.26 (−0.19)	−0.03 (−0.10)	0.46 (0.78)	1.23 (0.99)	0.10 (0.10)	−0.07 (−0.07)	−2.48^{+} (−1.76)	0.58 (0.97)	−0.02 (−0.10)	0.00 (0.06)	−0.19 (−0.42)
Immigrant	−0.06 (−0.45)	0.39 (0.19)	0.05 (0.41)	−0.13 (−0.66)	1.60 (1.60)	−0.37 (−0.50)	−0.05 (−0.06)	0.73 (0.86)	0.16 (0.45)	−0.31 (−0.33)	0.00 (−0.06)	−0.05 (−0.46)
Intercept					−16.51* (−2.03)	1.61 (0.35)	0.15 (0.03)	−11.97^{+} (−1.78)				
N	*1,420*	*2,188*	*2,642*	*2,219*								

Data: GSOEP (1990–2014). Own calculations. *z* statistics in parentheses.
Significance levels:
$^{+}p < 0.10$.
$^{*}p < 0.05$.
$^{**}p < 0.01$.
$^{***}p < 0.001$.
[a]: 1(1990–1994); 2 (1995–1999); 3 (2000–2004); 4 (2005–2009); 5 (2010–2014).

Table 2. Prevalence, penalty, and interaction-effects by single characteristics—Sweden

Period[a]	1–>2	2–>3	3–>4	1–>2	2–>3	3–>4	1–>2	2–>3	3–>4
	Prevalence effects			Penalty effects			Interaction effects		
Part-time employed	−0.25 (−1.48)	−0.23* (−2.03)	−0.04 (−0.23)	−0.25 (−0.74)	1.03 (1.19)	0.04 (0.08)	−0.35 (−0.07)	−0.40 (−1.33)	0.00 (−0.07)
Marginally employed	−0.43+ (−1.89)	0.65** (2.95)	0.01 (0.04)	0.02 (0.04)	1.48 (1.05)	1.08 (0.84)	0.03 (0.03)	0.66 (1.01)	0.00 (0.04)
Not employed	2.14*** (4.29)	−1.27*** (−4.59)	0.99* (2.40)	−0.17 (−0.57)	3.74* (2.21)	0.18 (0.24)	0.86 (0.07)	−1.36* (−2.17)	0.01 (0.25)
Low educated	−0.01 (−0.09)	−0.18 (−1.48)	−0.12 (−1.52)	0.28 (0.71)	0.27 (0.31)	−0.42 (−0.84)	0.24 (0.07)	−0.13 (−0.33)	0.03 (0.63)
High educated	−0.04 (−0.35)	0.11 (1.26)	0.14 (1.54)	0.99+ (1.70)	0.43 (0.50)	−2.67*** (−3.79)	−0.23 (−0.07)	0.12 (0.49)	−0.11 (−0.60)
Child 0–2 years	−0.66** (−2.59)	−0.10 (−1.22)	0.03 (0.25)	−0.06 (−0.22)	0.31 (0.70)	−0.12 (−0.38)	−0.21 (−0.06)	−0.05 (−0.61)	0.00 (−0.21)
3 or more children	−0.03 (−0.35)	0.00 (−0.10)	−0.08 (−1.25)	0.06 (0.35)	0.69 (1.36)	0.41 (1.11)	−0.16 (−0.07)	−0.05 (−0.54)	−0.02 (−0.52)
Age under 30	0.01 (0.28)	−0.09+ (−1.69)	0.03 (0.79)	0.02 (0.17)	−0.19 (−0.53)	−0.33 (−1.35)	−0.01 (−0.06)	0.06 (0.51)	−0.01 (−0.54)

Continued

Table 2. Continued

Period[a]	1–>2	2–>3	3–>4	1–>2	2–>3	3–>4	1–>2	2–>3	3–>4
	Prevalence effects			Penalty effects			Interaction effects		
Immigrant	0.18 (1.27)	0.05 (1.02)	0.03 (0.54)	0.01 (0.04)	0.12 (0.18)	0.42 (0.82)	−0.03 (−0.03)	0.01 (0.18)	0.01 (0.45)
Intercept				0.52 (0.29)	0.61 (0.14)	8.43*** (3.40)			
N	*4,085*	*6,069*	*6,660*						

Data: HEK (1990–2009). Own calculations. *z* statistics in parentheses.
Significance levels:
$^{+}p < 0.10$.
$^{*}p < 0.05$.
$^{**}p < 0.01$.
$^{***}p < 0.001$.
[a]: 1(1990–1994); 2 (1995–1999); 3 (2000–2004); 4 (2005–2009); 5 (2010–2014).

Table 3. Prevalence, penalty, and interaction-effects by single characteristics—United Kingdom

Period[a]	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5
	Prevalence effects				Penalty effects				Interaction effects			
Part-time employed	1.11^{+} (1.84)	2.35** (2.97)	−0.73 (−1.32)	0.88* (2.45)	1.11 (0.91)	−1.87 (−1.50)	−1.21 (−0.85)	−2.67* (−2.32)	0.33 (0.91)	−0.25 (−1.04)	0.10 (0.75)	−0.27 (−1.62)
Marginally employed	−0.43 (−1.33)	−0.14 (−0.92)	−0.27 (−1.48)	−0.04 (−0.72)	−1.11 (−1.25)	0.16 (0.28)	0.06 (0.14)	0.02 (0.08)	0.31 (1.03)	−0.02 (−0.32)	−0.03 (−0.13)	0.00 (−0.08)
Not employed	−3.81** (−2.72)	−6.67*** (−5.28)	2.22* (2.06)	−1.86** (−2.74)	1.20 (0.41)	−5.52^{+} (−1.93)	−1.61 (−0.79)	−1.83 (−1.04)	−0.18 (−0.38)	0.52 (0.86)	−0.15 (−0.78)	0.11 (0.84)
Low educated	−2.45** (−3.32)	−1.10* (−2.48)	−0.01 (−0.05)	−0.04 (−0.40)	−4.20 (−0.97)	−2.49 (−0.97)	−0.43 (−0.24)	−2.17 (−1.56)	1.03 (1.28)	0.19 (0.56)	0.00 (0.05)	0.02 (0.37)
High educated	−0.42 (−1.47)	−0.12 (−0.31)	−0.37 (−1.57)	−0.58** (−2.91)	−0.57 (−0.89)	1.18 (1.52)	−0.01 (−0.02)	1.48* (2.34)	−0.25 (−0.89)	0.02 (0.29)	0.00 (−0.02)	0.32 (1.52)
Child 0–2 years	−0.23 (−1.01)	0.32 (1.43)	−0.25 (−1.28)	0.01 (0.26)	−2.23 (−1.57)	0.13 (0.13)	0.89 (1.16)	−0.22 (−0.39)	0.67 (1.64)	−0.01 (−0.13)	0.21 (1.08)	0.01 (0.33)
3 or more children	−0.64^{+} (−1.66)	−0.43 (−1.04)	1.89*** (3.61)	0.13 (0.55)	1.10 (1.37)	−1.02 (−1.04)	−2.27** (−3.17)	0.03 (0.04)	−0.30 (−0.83)	0.05 (0.62)	−1.67** (−3.22)	0.01 (0.04)
Age under 30	0.06 (0.22)	−0.05 (−0.36)	0.07 (0.45)	0.10 (1.03)	0.39 (0.44)	0.03 (0.05)	−0.91^{+} (−1.94)	1.28** (2.83)	−0.16 (−0.43)	0.00 (−0.05)	−0.32 (−1.59)	−0.09 (−0.96)

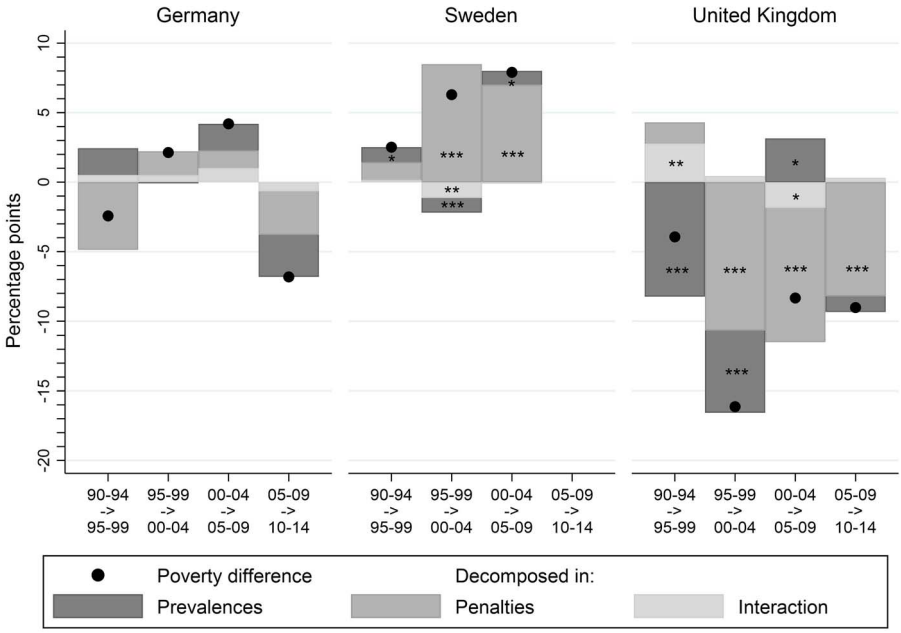
Continued

Table 3. Continued

Period[a]	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5	1–>2	2–>3	3–>4	4–>5
	Prevalence effects				Penalty effects				Interaction effects			
Never married	−0.24 (−0.99)	0.00 (−0.10)	0.34 (0.86)	0.32 (1.63)	1.20 (0.87)	0.90 (0.56)	0.44 (0.30)	−0.46 (−0.35)	0.28 (0.98)	−0.01 (−0.32)	0.12 (0.30)	−0.05 (−0.35)
Immigrant	−0.17 (−0.66)	0.01 (0.04)	0.28 v	−0.03 (−0.24)	−0.46 (−0.55)	0.55 (0.67)	−0.45 (−0.98)	0.54 (1.61)	0.19 (0.59)	−0.08 (−0.58)	−0.29 (−1.00)	0.21 (1.23)
Intercept					4.93 (0.76)	−2.76 (−0.51)	−3.96 (−0.89)	−4.14 (−1.21)				
N	*2,787*	*4,399*	*7,033*	*12,489*								

Data: BHPS/UKHLS (1991–2014). Own calculations. *z* statistics in parentheses.
Significance levels:
$^{+}p < 0.10$.
$^{*}p < 0.05$.
$^{**}p < 0.01$.
$^{***}p < 0.001$.
[a]: 1(1990–1994); 2 (1995–1999); 3 (2000–2004); 4 (2005–2009); 5 (2010–2014).

Figure 5. Prevalence, penalty and interaction effects on changes in single-mother poverty across five time periods 1990–2014



Data: GSOEP, BHPS/UKHLS, HEK (1990–2014). Own calculations. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

reaches statistical significance (and only at a 10% level): Between 2000–2004 and 2005–2009, after the social assistance reforms had been introduced, part-time employment became significantly more prevalent among single mothers in Germany, which contributed to the overall increase in single-mother poverty.

For Sweden, the results from the decomposition analysis (figure 5 and table 2) confirm the descriptive findings in figure 3 that prevalence effects are not the main driver for the rise in single-mother poverty. Table 2 reveals that there are both favorable (less marginally employed single mothers and fewer living with very young children in 1995–1999) and unfavorable (more nonemployed single mothers) compositional changes between the early and the late 1990s. In comparison to the late 1990s, the share of nonemployed and part-time employed single mothers decreased considerably in 2000–2004, balancing the rising share of marginally employed single mothers. Hence, single-mother poverty would have decreased in Sweden if only these compositional changes had taken place.

In the United Kingdom, the slight decrease in poverty from the first to the second period can be attributed to favorable changes in single mothers' social composition. Table 3 shows that this effect is mainly driven by a decrease in nonemployment and low education (lending support to Hypothesis 1). There is weak evidence that an increase in part-time employment increased poverty

between the first and the second time period. The years after New Deal policies were introduced (2000–2004) are characterized by a considerable further decrease of nonemployed or low educated single mothers. At the same time, single-mother poverty in the United Kingdom keeps declining, but at a slower pace than before. In the years 2005–2009 compared to 2000–2004, this decrease in poverty can be mainly attributed to prevalence effects, namely to rising shares of nonemployed single mothers and growing shares of living with three or more children.

Penalty effects

Penalty effects turned out to be weak in Germany, but strong in Sweden and the United Kingdom. In Germany, there are no clear trends of penalty effects across the time periods. As shown in table 1, the associations between poverty and part-time employment increased significantly between the early and the late 1990s, and again between 2005–2009 and 2010–2014. Similarly, between these two most recent periods, there has been an increase in the poverty penalty associated with nonemployment for single mothers in Germany. By contrast, being marginally employed or living with a very young child was less associated with poverty in the late 2000s than in the early 2000s. Moreover, the association between residence in east Germany and poverty declined in the most recent period (2010–2014) compared to the preceding periods. In Germany, none of the interaction effects reached substantive or statistical significance, and thus, are not further discussed.

In Sweden, the rise in poverty of 7%pts. in 2000–2004 can be completely attributed to penalty effects. Table 2 shows that the increased penalty for being nonemployed is the key change here. Moreover, this timeframe shows a negative interaction effect regarding nonemployed single mothers, which indicates that if the share of nonemployed single mothers had not declined, poverty would have increased further as at the same time nonemployment became associated with a larger penalty. The continuing increase in single-mother poverty between 2000–2004 and 2005–2009 can only partially be explained by our model. On the one hand, the recurrent increase in nonemployment among single mothers accounts for a small part of this rise in poverty. On the other hand, there are no substantially or statistically significant poverty-enhancing penalty-effects. In contrast, being highly educated seems to prevent poverty even better in the late 2000s than in the early 2000s. At the same time, the comparatively large intercept indicates that omitted variables seem to play a crucial role for explaining this development.

In the United Kingdom, the association of not being employed with poverty weakened remarkably in the period 2000–2004—the main drivers for the poverty-reducing penalty-effects (which is in line with Hypothesis 2b). In the period 2005–2009, the penalty of being younger than 30 years old and of living with three or more children decreased compared to the previous period. At the same time, the negative interaction effect of the latter indicates that this declining association with poverty was particularly important in reducing

poverty because the prevalence of single mothers living with three or more children increased in that period. The last period (2010–2014) is characterized by rather mixed composition and penalty-effects, whereby the poverty-reducing effects outbalance the poverty-enhancing ones.

In light of our hypotheses, we found some support but also some counter evidence: For Germany, we expected that the stable poverty among single mothers in the 1990s and early 2000s and reduced poverty for the most recent period cannot be explained by changes in prevalences, but partly by increased penalties associated with non- or reduced employment. The evidence supports Hypothesis 1a: employment did not increase among single mothers in the observed time frame and therefore there was no prevalence-effect. In fact, as predicted in Hypothesis 2a, not being in employment and also being in part-time employment were increasingly penalized, which was associated with higher poverty. For the United Kingdom, we expected that both changes in prevalences and penalties of risk factors explained the decrease in poverty among single mothers. The analysis revealed less poverty reduction in later years, corresponding to increased conditionality for income support, and reduced poverty in line with fewer single mothers out of employment (a prevalence effect) and in the recent period part-time work being less penalized (a penalty effect). These findings are in line with Hypotheses 1b and 2b. In Sweden we expected an increase in poverty related to reduced redistribution (Hypothesis 2c), in particular with respect to lower and less accessible unemployment benefits. Indeed, we observed a marked decline in overall poverty reduction through redistribution, and that not being employed was increasingly penalized in the period after 2000.

Discussion

Dominant explanations of single-mother poverty have either been overly individualistic (focusing on the socioeconomic background of single mothers) or overly contextual (focusing on welfare state effects). Considered separately, both approaches fail to explain diverging trends in poverty among single mothers in different countries since the 1990s. The rise in single-mother poverty in Sweden, its decline in the United Kingdom and the stagnating poverty rate of single mothers in Germany, trends defying any classical welfare regime logic, cannot only be explained by an individual-level, nor by a contextual-level development. Rather, the different factors explain poverty trends of single mothers to varying degrees across countries, and hence they should be considered in conjunction.

In this paper, we built on the framework of Brady et al. (2017) to consider both, changes in the prevalence of particular individual characteristics of single mothers and changes in the penalties associated with them, for explaining diverging single-mother poverty trends. Following this framework, we assumed that penalties in particular were related to changes in policies. We found that changes in the prevalence of risk factors among single mothers contributed little to the explanation of poverty in Germany and Sweden. However, in the United Kingdom, single mothers' social composition evolved favorably with respect to

their poverty risks: the proportions of single mothers out of employment and with a low level of education reduced over time, which brought down poverty risks. Second, penalty-effects mattered in each country, but in different ways. Although not being employed and working part-time became less of a risk factor over time in the United Kingdom, in Sweden the penalty associated with not being employed rose markedly, contributing to poverty increases. This tendency was also visible for recent periods in Germany, where policy makers seem to have missed the opportunity to further reduce penalties associated with lower employment intensities of single mothers. The findings for the United Kingdom are in line with the expected effects of the workfare reforms and with the introduction of some family support. For Sweden, the findings correspond with the dismantling of the unemployment benefits that took place during those years (cf. Alm et al. 2020), and correspond with the reduced redistributive effectiveness of the Swedish welfare state.

In conclusion, we found some support for individual-level and contextual-level explanations for poverty, but none applied universally or could single-handedly explain the diverging trends in single-mother poverty in Germany, Sweden, and the United Kingdom. This has important implications for the study of family demography as an explanation of trends in poverty, as well as for the comparative study of welfare state outcomes. Regarding the former, family demography can only effectively be invoked as explanation of trends in poverty when a distinction is made between the composition of risk factors and their associated penalties for poverty. It matters not only how common a risk factor for poverty is among a social group, but also how strongly it is associated with poverty. A complete explanation needs also be contextually aware, for otherwise it remains unclear why composition or penalties changed over time or differ across countries. The importance of this was demonstrated by a decline of the *share* of nonemployed single mothers (a favorable compositional change) in the United Kingdom, compared to rapidly increasing *penalties* associated with being out of employment in Sweden.

With respect to the study of welfare state outcomes, our research challenges regime-based categorizing for being static and insensitive to policy change. Ideal-typical formulations of welfare state regimes could explain the situation as observed in the 1990s (Esping-Andersen 1990): high single-mother poverty in the liberal welfare state of the United Kingdom, low in social-democratic Sweden and an intermediate level of poverty in conservative Germany. Yet, it required attention to specific policy reforms *in combination with* attention to aspects of family demography, to explain the decline in poverty in the UK, and the rise of poverty in Sweden.

The analyses presented here were not able to explain the diverging trends in poverty in these three countries in full. The intercepts in the decomposition analyses indicated changes in poverty unrelated to the variables we were able to include. The decline in the United Kingdom could perhaps further be explained by higher levels of benefits for single mothers, including child benefits. Similarly, the increase in Sweden could potentially be explained by the reduced redistributive capacity of the Swedish welfare state. Specifically in Sweden, it was argued that a large share of dual-earner families resulted

in high median household incomes, and therefore poverty thresholds that are hard to meet by single mothers (Alm et al., 2020). For future research, this importantly brings the relative position of a risk group into focus as an additional type of explanation for poverty: not only should the demographic composition and policy benefits of a risk group be considered, but also of the rest of the population.

Poverty is multifaceted, and has many explanations. It therefore stands to reason that in cross-national analyses of poverty no single type of explanation will hold across all contexts, as was demonstrated in this study. Changes in family demography are often considered as an individual explanation of trends in poverty, but the distinction between composition of risk factors and the associated poverty penalties demonstrates that these individual explanations need to be considered as inherently contextual. And rather than deriving hypotheses from static regime types, we thus suggest to consider different explanations for social inequality outcomes and allow those explanations to vary across countries.

Notes

1. https://www.scb.se/hitta-statistik/statistik-efter-amne/hushallens-ekonomi/inkomster-och-inkomstfordelning/hushallens-ekonomi-hek/.
2. The modified OECD equivalence scale is used: a weight of 1.0 is assigned to the household head, a weight of 0.5 to other household members aged 15 years or older and a weight of 0.3 to household members up to the age of 15.
3. If we used the more common threshold of aged under 25, we would run into serious problems with case numbers in Germany. We ran all models with age under 25 as a robustness check, there are no substantial changes to our results. We checked for different lower age limits (18 or 20) and different measures of young age (below 25 or below 30). The results remain robust across these different measurements.
4. This category includes divorced and widowed mothers.
5. Unfortunately, in the United Kingdom these variables are not available in the years 2006–2008.
6. The steep rise in anchored poverty in 1991 reflects a data issue in the GSOEP due to German reunification and has no substantial meaning.

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