

The heterogeneity of social policy impact and coping mechanisms in challenging times

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A thesis submitted for the degree of Doctor of Philosophy in
Applied Social and Economic Research

Institute for Social and Economic Research
University of Essex

December 2023

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Abstract

Since the early 2000s, social policy discourse in Europe has centred around the adult worker model which focuses on labour market activation as one of the main goals of social policy. This has created new pressures for groups whose working patterns are not those of the typical male breadwinner. The thesis focuses on three such non-traditional breadwinner groups. Chapter 1 analyses the income situation of EU-migrants compared to natives in different European welfare regimes and decomposes the difference into socio-demographic versus labour market characteristics. Chapter 2 focuses on inactive ethnic minority women in the UK and studies whether an income shock in the household can be a push factor for joining the labour market. Chapter 3 analyses the individual poverty risk of women with different labour market characteristics in the EU and compares their situation to the situation of typical male workers. All three chapters focus on coping mechanisms in economically challenging times (the tax-benefit system in Chapter 1 and 3 and the added-worker-effect in Chapter 2) and emphasize the heterogeneity in the level of coping. The three empirical chapters highlight different implications of the adult worker model for labour market outsider groups. They show that being in employment is very often not sufficient and often leads to a less preferential economic situation compared to labour market insiders. The empirical contributions furthermore highlight the importance of taking the heterogeneity of life courses and circumstances into account. While the adult worker model applies one standard to all, this leads to blind spots for groups that are disadvantaged on the labour market or face social and cultural barriers to labour market participation. Thus, labour market disadvantages and barriers to employment need to be part of the policy discourse around the adult worker model.

Acknowledgements

An Indian friend told me once that Austrians always want to walk everywhere. He has a point. The PhD was my longest walk yet, sometimes more of an uphill hike. My family will confirm that my hiking motivation is very much linked to a nice meal but with this length of a journey, I had many motivational experiences and encounters along the way.

I am very grateful for the support received from my supervisors Renee Reichl Luthra, Amy Clair and Silvia Avram. They are the most supportive, knowledgeable and compassionate female powerhouse that I could have asked for, who provided extensive feedback throughout the process and guided me along the way.

I was lucky to have been surrounded by a great community at the University of Essex, who made the journey enjoyable and taught me beyond the scientific experience: My amazing EUROMOD colleagues and the head of the team Holly Sutherland, a role model in many ways. My colleague and dear friend Iva Tasseva who was my PhD buddy from the very beginning, was always available for methodological questions and provided priceless emotional support. My officemates Paola De Agostini and Daria Popova who encouraged me to stand up for my research project and with whom I had many laughs. My housemates at Admirals Walk, especially Ben, who made me feel at home in the UK. My walking Essex friends, a unique group of people. My PhD peers and colleagues at ISER.

I am also very grateful for my extended research families: My colleagues at SASPRI who helped me with juggling work and PhD. My friends Eszter, Sandra and Judith at the European Centre Vienna who welcomed me with open arms after I had left the UK.

Finally, I am very grateful for my family and friends who supported me unconditionally all these years: My dad who taught me the importance of a healthy work-life-balance that helped me to enjoy the journey. My mum who was not able to join me on the journey but still had an immense part in it. My sister Chrissi who kept reminding me that unproductive episodes are part of the experience and that I always get there in the end. Oma, Tobi, Andi, Dusanka, Rosi, Fabi, Johanni, Mila, Resi, Dette, Andi K., Lisi and Thomas who provided comfort food, sweet treats, cocktail hours and happy distractions.

Declaration

Chapter 3 is joint work with Silvia Avram and Daria Popova from the University of Essex. The chapter is based on their methodology for calculating individual disposable incomes. Using their tool kit as a starting point, I carried out the necessary adaptations to the syntax and calculated the empirical results. I furthermore developed the research idea and the theoretical background. Finally, I am responsible for the writing of all sections in the chapter.

Introduction

Since the early 2000s, social policy discourse in Europe has emphasized the importance of 'making work pay'. The so-called adult worker model puts work for all working-age individuals at the centre and defines labour activation as one of the main goals of social policy.

This has created new pressures for groups whose working patterns are not those of the typical male breadwinner (i.e. male, working-age, able-bodied, employed full-time without interruptions) as the aim to increase employment has partially led to a reduction of reservation wages, eroded traditional social protection systems and resulted in support gaps for individuals where 'making work pay' has not worked out (Atkinson 2010, Cantillon 2011). A push for greater labour market flexibility has furthermore advanced the dualization of European labour markets with a high level of protection for typical labour market insiders and an increase in less protected atypical labour market outsider jobs (Emmenegger et al. 2012).

The thesis focuses on three non-traditional male breadwinner groups that are likely to be more affected by this insider-outsider divide. Chapter 1 analysis the income situation of EU-migrants compared to natives in different European welfare regimes and decomposes the difference into socio-demographic versus labour market characteristics. Chapter 2 focuses on inactive ethnic minority women in the UK and studies whether an income shock in the household can be a push factor for joining the labour market. Chapter 3 analyses the individual poverty risk of women with different labour market characteristics in the EU and compares their situation to the situation of typical male workers.

All three chapters focus on coping mechanisms in economically challenging times and emphasize the heterogeneity in the level of coping. While Chapter 1 and 3 take the role of tax-benefit systems into account, Chapter 2 assesses the role of a within-family coping mechanism called the added-worker-effect (Lundberg 1985). Heterogeneity is considered by focusing on EU-migrant/native income differentials along the income distribution in Chapter 1, by assessing the situation of women from different ethnic minority groups in

Chapter 2 and by analysing the situation of women with different labour market status and job characteristics in Chapter 3.

Three case studies of labour market outsiders

The largest group that deviates from the adult worker model is women. Although labour market participation rates of women have increased, their labour market participation has also become more heterogeneous and polarized with an increase in work-oriented life courses and simultaneous increases in part-time work and sequential labour force participation (Berger et al. 1993). Their higher likelihood of atypical employment is often associated with negative consequences in terms of income and job mobility (Schwander and Häusermann 2013), as well as lower job satisfaction and job prospects (Seo 2021). Additionally, women are more likely to have career interruptions and this in turn significantly increases their likelihood of atypical employment or of not being able to find work (Biegert 2014).

Chapter 3 shows that even women in full-time employment face a higher individual poverty risk than typical male workers. The poverty risk gap as compared to typical male workers, who are the benchmark everyone is compared to in the adult worker model, increases for women in atypical employment or for self-employed women. Thus, fitting the stereotype of the typical male worker as closely as possible is important but still does not solve gender differences in market incomes.

Another group of labour market outsiders are migrants. Newcomers to the country often face bureaucratic barriers to accessing the labour market and cannot rely on the same social capital as natives. These barriers are reduced for EU-migrants due to the 'Right to Freedom of Movement' which grants them access to other EU countries' labour markets and welfare systems (Favell and Recchi 2009). However, the equal treatment with nationals is conditioned on active labour market participation (Shutes 2016), stratifying EU-migrants along the adult worker model's ideal of "the citizen as a paid worker" (Carmel 2013). At the same time, the open access to the labour market and welfare state allows for more diverse and fluid migrant profiles (Braun and Arsene 2009, D' Angelo and Kofman 2017, Luthra et al. 2018).

The negative outcome of the conditionality as opposed to improved opportunities for a more diverse group of migrants is highlighted in Chapter 1. Differences in earning levels are an important negative contributor to EU-migrant/native income differentials along the income distribution in most welfare regimes, even though migrants are more likely or similarly likely to be in employment as natives. This is further amplified by the younger-age composition of EU-migrants at the bottom of the distribution while higher educated EU-migrants achieve a good income position at the top.

The third group focused on are ethnic minority women in the UK. Ethnic minority groups are often confronted with more pronounced disadvantages in terms of unemployment, under-employment, level of earnings and labour market discrimination (Berthoud 2000, Dustmann et al. 2003, Platt 2006, Li and Heath 2008; 2016, Nandi and Platt 2010, Wood et al. 2009, Zuccotti and O'Reilly 2019). Especially women from specific ethnicities are also faced with high social and cultural barriers to entering the labour market (Khattab 2012, Dale and Shaheen 2010). In Pakistani and Bangladeshi communities, this barrier is not necessarily bound to childcare duties (Dale and Shaheen 2010, Holdsworth and Dale 1997) but defined more generally based on societal norms that portray a clear division of men as the breadwinner and women as the carer of home and family (Dale et al. 2006). Black Caribbean and Black African women on the other hand have more egalitarian gender role attitudes (Kan and Laurie 2018) with female labour force participation being the norm in their communities (Dale et al. 2006).

The role of differences in social and cultural barriers is very apparent in the results of Chapter 2. The analysis shows that both the likelihood of inactive women entering the labour market as well as moderating factors are ethnically patterned. Even though Pakistani and Bangladeshi women have the greatest theoretical potential to join the labour market if the household experiences an income shock, they are the least likely.

Welfare state access and other support mechanisms

Social policy can nudge the changing of social and cultural norms as has for example been the case through parental leave policies (Seo 2023). At the same time, social policy

needs to take the lived reality of individuals into account and provide support adequate to their current living situation. This is especially apparent for labour market outsiders for whom 'making work pay' might not always be an option.

It is a core task of welfare states to help households in coping with market failure (Greve 2019). Titmuss (1959) differentiates between residual welfare states that only step in when the family or market fails to provide support and welfare states with a holistic and institutionalised commitment to support. Similarly, Esping-Andersen (1990) considers the level of decommodification, i.e. the institutionalisation of social citizenship rights (Marshall 1950), as well as the applied level of stratification, i.e. how welfare states order social relations by defining who is eligible for support and under which circumstances.

The adult worker model has shifted the balance between market, family and the states substantially. Many welfare states have moved towards work-to-welfare or workfare (Dean 2007) where the main focus is no longer on supporting the social situation per se (Saraceno 2015) but on how to support adults to (re-)enter employment (Lewis 2001).

Still, Chapter 3 shows that women who are furthest from the labour market are supported the most by tax-benefit policies. Thus, traditional social protection is still available for women outside the labour market. This is, however, to a lesser extent the case for women in atypical employment and especially for women in self-employment. Women in more precarious employment do not have sufficient access to in-work benefits and are disproportionately affected by tax and social insurance payments, leading to substantially higher individual poverty risks than typical male workers.

Another group facing difficulties in accessing social benefits are migrants. Historically, welfare states have been imagined as homogeneous societies where support is provided to their citizens (Castles and Schierup 2010), excluding migrants by definition. This is, however, resolved for EU-migrants through the 'Right to Freedom of Movement' which defines all citizens of an EU country as EU citizens with access to the welfare state.

EU-migrant's access to the labour market does not necessarily 'make work pay' as they often find themselves under-employed in low paid and low status jobs and jobs with little job security (Kogan 2007, Recchi 2015, Khattab and Fox 2016, Kogan 2011). Thus, access to benefits and especially in-work benefits is important to mitigate these labour market

disadvantages.

Chapter 1 shows that access is not always in place. Although more universalistic or well-developed social insurance based states are better equipped to mitigate market income differences, low-income migrants often face access problems to minimum income benefits resulting in a relatively high social gradient for migrants at the bottom of the income distribution in these countries. At the same time, countries with overall less developed support systems are not equipped to provide support to EU-migrants with lower earnings. In these countries, public pensions often provide an important income source for the whole family, a safety-net that migrants often cannot rely on.

Alternatively, families can also revert to other coping strategies such as savings, borrowing or intra-household strategies. These strategies are very often short-term while the welfare state's task is not only to provide short-term relief but to reduce poverty and inequality through redistribution more generally (Barr 1992).

Still, alternative strategies are important especially in situations where welfare state support is not sufficient. Especially during times of crisis, families are more likely to turn to within-family coping mechanisms (Blundell et al. 2016, Bryan and Longhi 2013). One such strategy is the added-worker-effect which posits that women are more likely to join the labour market when their partner in the household becomes unemployed (Lundberg 1985).

Chapter 2 highlights the importance of taking the social and cultural context of women in empirical assessments of the added-worker-effect into account. Gush et al. (2015) show that households often refrain from adjusting their living and work arrangements and instead aim at preserving the status quo. Chapter 2 shows that this is even more the case for women from ethnic minority groups and especially Pakistani and Bangladeshi women. For them, even a substantial income shock in the household does not serve as a push factor for entering the labour market.

Methods for assessing the heterogeneity of coping

The focus on heterogeneity in the level of coping is also reflected in the methods applied in each chapter.

Previous research on the income situation of EU-migrants has very often focused on the bottom of the income distribution. The decomposition method applied in Chapter 1 allows to assess EU-migrant/native income differentials along the full income distribution and to take the diverse profile of EU-migrants into account. It builds on a well established stream of literature (Bargain and Callan 2010, Bourguignon et al. 2008) but extends it to group-specific rather than time-specific differences.

Both Chapter 1 and 3 use the EU-wide tax-benefit microsimulation model EUROMOD (Figari et al. 2015). This allows the simulation of counterfactual disposable incomes with native's earning levels adjusted to those of EU-migrants for Chapter 1 and the calculation of individual poverty risks in Chapter 3. While previous work on individual poverty is often limited to very specific household types and income sources, the approach used here allows to take all working-age women and their diverse living and income situations into account. The analysis is based on a methodology previously developed by Avram and Popova (2022) for income inequality and now applied to poverty risk.

Finally, Chapter 2 assesses the added-worker-effect for women from different ethnic minority groups separately to take differences in barriers to joining the labour market into account. It uses longitudinal data to analyse women's reaction to an income shock in the household. As such, it extends the literature on ethnicity-focused dynamic models of labour force participation building on work by Khoudja and Platt (2018) and focuses on all living situations rather than on (married) couples only as in previous research.

The three empirical chapters highlight different implications of the adult worker model for labour market outsider groups. They show that being in employment is very often not sufficient, often leading to a less preferential economic situation compared to labour market insiders. While advocating for 'making work pay' might be key for the sustainability of the welfare state (Esping-Andersen et al. 2002), labour market disadvantages often result in low financial stability for labour market outsiders.

The chapters furthermore highlight the importance of taking the heterogeneity of life courses and circumstances into account. While the adult worker model applies one standard to all, this leads to blind spots for groups that are disadvantaged on the labour market

or face social and cultural barriers to labour market participation. Both, labour market disadvantages and barriers to employment, need to be part of the policy discourse around the adult worker model.

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Chapter 1

Belonging, entitlement and inclusion?

- Decomposing EU-migrant/native income differentials and the role of European tax-benefit systems¹

¹Acknowledgements: I would like to thank Amy Clair and Renee Reichl Luthra for their continuous support and feedback, as well as Iva Tasseva, Silvia Avram, Malcolm Brynin and Holly Sutherland for their valuable comments and suggestions. I am also grateful for comments received at ESPAnet, ESPAnet Austria, SPA annual conference and annual conference of migration research in Austria. The results presented here are based on EUROMOD version H1.24+. I am indebted to the many people who have contributed to the development of EUROMOD. The results and their interpretation are the author's responsibility.

Abstract

Freedom of Movement provides EU-migrants with access to the labour market and the welfare system in other EU countries. Existing literature shows that even though EU-migrants are often faced with higher poverty risks, they are not more likely to receive benefits than natives. Relatively little is known about the drivers of disposable income differences and the situation of EU-migrants with higher incomes. This comparative analysis explores EU-migrant/native disposable income differentials along the income distribution. It uses a decomposition approach together with tax-benefit microsimulation to analyse drivers of the difference and the role of the welfare state. Results highlight the negative role of lower earnings of EU-migrants as an important contributor to disposable income differences while differences in labour market status play a smaller and mixed role. Differences are exacerbated by younger age-profiles of EU-migrants and only partially mitigated by positive education selectivity. Welfare states with more universalistic benefits or well-developed social-security based systems are better equipped to mediate income differences. However, EU-migrants migrating to these welfare states face access problems to benefits of last-resort leading to a high social gradient at the bottom of the income distribution. Welfare states where pensions are the most important benefit for the family as a whole are not prepared to mitigate income differences.

Keywords: migration, income inequality, welfare state, tax-benefit systems, comparative social policy

1.1 Introduction

Citizenship in the European Union (EU) opens possibilities for spatial movements across Member States. Its cornerstone is the Right to Freedom of Movement (FoM) for all EU citizens with a framework of regulations decreasing the bureaucratic barrier to migration. This includes 'equal treatment with nationals in access to employment, working conditions and all other social and tax advantages' (European Parliament and European Council 2014). In 2019, 18 million EU-citizens were living in another EU country (Fries-Tersch et al. 2020), a sizeable group of people equipped with a legal status close to natives and preferential treatment over other migrant groups.

The equal access to the labour market and the welfare state offers a unique case to study the income situation of migrants along the income distribution while holding legal conditions of migration constant and considering the role of social policy in achieving a good living standard for all residents.

The extant literature mostly focuses on immigrants at the bottom of the income distribution showing that EU-migrants face a higher risk of poverty (Lelkes and Gasior 2018) while very little is known about those with higher incomes. Research on migration and social policy often assumes that migrants are a homogeneous group, an assumption that is not borne in the data on EU-migrants.

The aim of this contribution is to decompose EU-migrant/native disposable income differentials along the income distribution to take the heterogeneity of the migrant group into account. First, it examines the extent to which demographic and labour market characteristics can explain differences in disposable income using a decomposition approach. Secondly, it assesses how social policy mitigates or exacerbates differences. This is being done by comparing market and disposable incomes and by assessing the role of different income sources using the tax-benefit microsimulation model EUROMOD.

The contributions of this study are four-fold: First, I compare market versus disposable income inequalities to study the overall role of the tax-benefit system. I use a comparative approach to analyse the situation in different welfare regimes migrants select into and

the varying role of conditionality in different welfare traditions. Secondly, I focus on the whole income distribution to move away from the focus on the bottom of the income distribution. This, thirdly, allows me to decompose the quantitative importance of various characteristics on the overall income difference as well as by income groups. Fourthly, from a methodological point of view, this extends the decomposition methodology formalised by Bargain and Callan (2010) to a comparison of two population subgroups.

The following section reviews stratification factors that might hinder improved life chances after migration and welfare state literature in this context, followed by a section on the methodological approach and the underlying data. Finally, I present my findings and conclusions.

1.2 Literature

1.2.1 The heterogeneity of EU-migrant profiles

Observing growing inequality alongside an increasing awareness of ethnic discrimination in the 1980s, social policy researchers began to acknowledge that the social situation of migrants needs to be addressed (Castles and Schierup 2010). The first studies focused on unemployment as the main driver of exclusion caused by tight labour market access criteria. A second wave shifted the focus to working-poor migrants driven by irregular migration, changes in migration policies, informal employment and restricted access to the welfare state.

Although FoM has in principle resolved these access problems, many EU-migrants still struggle to make ends meet. Migrants are often at the bottom of the earnings distribution due to under-employment and over-representation in low paid jobs (Kogan 2007, Recchi 2015, Khattab and Fox 2016). This is partly driven by an insider-outsider divide that selects migrants into jobs with low status and earnings combined with little job security (Kogan 2011). There is also a clear divide between EU-15 and New Member State (NMS) migrants, with the latter often being disadvantaged in terms of labour market outcomes, employment patterns, occupational attainment and security of employment contracts (Felbo-Kolding

et al. 2019, Hopkins and Dawson 2016, Demireva 2011).

However, EU-migrants are also a very heterogeneous group as open access to the labour market and the welfare state allows for more diverse and fluid migrant profiles (D' Angelo and Kofman 2017). While the above outlined disadvantages might be true for traditional migrant groups, others may face fewer difficulties. Braun and Arsene (2009) distinguish between labour migrants, affluent pre-retirement movers choosing migration as a lifestyle choice, pensioners moving from the North to the South and Eurostars, i.e. (young) professional migrants. Luthra et al. (2018) characterise newer types of EU-migrants who are younger, higher educated, more often female, and less motivated by labour market opportunities alone.

The socio-demographic profile of EU-migrants is furthermore different from most majority populations. The share of working-age individuals is significantly higher (Fries-Tersch et al. 2020), highlighting their greater potential for active labour market participation as well as potential differences in welfare provision needs that are tied to life course events (de Graaf and Maier 2017). EU-15 migrants are often better educated than natives, while educational profiles are more diverse in the case of NMS-migrants (Kahanec et al. 2016). Still, higher education does not necessarily translate into better labour market chances (Klekowski von Koppenfels and Höhne 2017; Zwysen 2020) and especially NMS-migrants are often confronted with skill-mismatch (Khattab and Fox 2016). Research on the situation of migrants in Italy, Spain and France shows that the downgrade of Eastern European migrant's skills is higher in segmented labour markets and highlights the importance of acquiring human capital in the destination country for upward mobility (Fellini and Guetto 2019).

Thus, although EU-citizens constitute a privileged migrant group in terms of labour market and welfare access, not all stratification factors - returns to education, outsider status on the labour market and disadvantaged NMS-migrants - have been fully resolved by the EU membership.

1.2.2 The conditionality of labour market and welfare access

One crucial explanatory factor is that the privileged labour market and welfare state access is tied to conditions. Welfare access is restricted to EU-citizens who are either working, actively looking for a job or who return to their country of origin (plus family members of these groups). Additionally, EU-migrants who moved less than five years ago must be self-sufficient, health-insured (Carmel et al. 2016) and can often only access specific benefits. The right to stay is furthermore conditioned on the definition of who qualifies as a worker which can be potentially quite restrictive and can also affect access to permanent residence as it requires EU-citizens to be able to stay in the country as a worker (Shutes 2016). Even though, EU-migrants have a theoretical right to access support, many face bureaucratic burden and additional conditionalities in accessing them in practice (Dwyer et al. 2019, Lafleur and Mescoli 2018, Bruzelius 2019).

This puts pressure on EU-migrants and defines them as a highly stratified group based on the ideal of "the citizen as a paid worker" (Carmel 2013). The conditionality limits the flexibility on the labour market and drives EU-migrants into accepting unstable work contracts (Lafleur and Mescoli 2018). The costs of job search are very high for migrants and pressures them to choose jobs with immediate financial returns (Dustmann 2000). More flexible labour markets (like in the UK, Ireland, Denmark) tend to provide better employment opportunities for migrants than labour markets with higher degrees of employment protection legislation (Southern Europe) unless there is a demand for workers in lower-skilled jobs (Kogan 2007). Women in particular are also likely to be restricted by atypical work arrangements and care responsibilities which do not fulfil the criteria of continuous labour market participation (Shutes and Walker 2018).

In addition, many countries have restricted access to the welfare state based on the welfare magnet theory (Borjas 1999). It posits that less productive migrants choose countries with more generous welfare systems.

The starting point for stricter conditionality differs as welfare states are usually bound to their historical path-dependency (Anderson and Pontusson 2007). In general, universalistic welfare states (for example Scandinavian countries) disproportionately benefit new-

comers without prior work history while social-security based systems (such as Austria and Germany) exclude migrants from access to benefits due to their lack of work history in the destination country and thus, less often manage to mitigate disadvantages on the labour market (Kesler 2015).

Additionally, the right to social support is also stratified by the country of origin's welfare state. The social protection system in the home country conditions the degree of transferability especially at the beginning of migration and specifically for jobseekers and pensioners (Bruzelius et al. 2017). The FoM was furthermore not automatically granted to every new EU-citizen. The first enlargement towards Eastern European countries in 2004 triggered a debate on free movement and the rights associated therewith. Many countries decided on a transitory period with limited access to labour market and welfare provision. Thus, EU-migrants arriving in the transitory period might have had a very different migration experience.

The welfare magnet hypothesis is often contested in more recent literature that demonstrates that EU-migrants are not motivated by welfare, are less likely to apply for benefits and less likely to receive benefits due to tighter control of entitlements (Martinsen et al. 2019; de Jong and de Valk 2020; Godin 2020). Medgyesi and Pölöskei (2013) show that migrant/native differences in benefit receipt are non-significant or very small in most EU countries. In a similar vein, fiscal impact studies show that the budgetary impact of migrants is small in terms of GDP and driven by lower income tax and social insurance contributions (SIC) rather than higher benefit receipt (Christl et al. 2022, OECD 2013b).

The balance of contributions to and benefits out of the system gives an interesting macro-fiscal perspective but offers very little information on the actual income situation of migrants. Studies assessing whether EU-migrants are more or less likely to receive benefits often do not assess whether their socio-demographic profile should lead to higher benefit receipt. In fact, the presented evidence points to disadvantages on the labour market that are not fully compensated by the welfare system.

This study moves closer to a micro-fiscal perspective with a focus on EU-migrant/native income differentials. The decomposition analysis quantifies the extent differences are based

on socio-demographic factors versus labour market-related characteristics. The discussed literature suggests that labour market related factors should be the driving force of income differentials. On the one hand, the EU-migrant as a worker principle indicates a relatively high proportion of EU-migrants in employment. On the other hand, this might be counteracted by the weaker position of EU-migrants on the labour market, leading to lower labour market outcomes.

It is furthermore important to take the heterogeneity of EU-migrants into account and to acknowledge that their socio-demographic profiles are often different from natives, potentially mitigating and accelerating EU-migrant/native income differentials. If EU-migrants are predominantly younger than natives, they are less likely to be retired and thus, more exposed to the conditions on the labour market. At the same time, EU-migrants are often better educated than natives which could be an important driver of lower income differentials. A caveat of the underlying data is that it does not differentiate between countries of origin. Thus, differences between EU-15 and the often disadvantaged situation of NMS-migrants cannot be tested.

The methodological approach furthermore enables the exploration of the potential income equalising effects of welfare support. Based on the literature, EU-migrants living in countries with higher labour market flexibility are expected to be less affected by the labour market conditionality and subsequently less dependent on welfare states to mitigate differences. If they need support, welfare states with more universalistic and generous benefits are better equipped to mitigate income differences, suggesting a lower social gradient of EU-migrants in these regimes. At the same time, the literature highlights that EU-migrants do not always apply for benefits or are not always granted access even if they would be eligible. This might lead to a support gap, contributing to higher income differentials.

1.3 Methodology

The analysis is based on EU-SILC 2015 data (Eurostat 2019) for all countries except the United Kingdom (UK) where a special license of the FRS 2014/15² (ONS and NatCen 2019) is used. EU-SILC is a representative dataset that meets demanding requirements in terms of country comparability, detailed information on income sources and household composition as well as information on migration status. The same is true for FRS which is the underlying dataset for EU-SILC in the UK but includes a larger sample size.

The analysis focuses on 12 destination countries: Austria, Denmark, Finland, France, Greece, Italy, Luxembourg, the Netherlands, Spain, Sweden, Portugal and UK. NMS are excluded due to their small number of EU-migrants (reflected in a small sample size) but are included in the sample of migrants living in the destination countries. Further excluded are Germany and Belgium, as EU-migrants cannot be identified in the data and international civil servants in Luxembourg given that the tax-benefit system does not apply to them³.

One caveat of EU-SILC data is that the migrant sample is relatively small in most countries (Table 1.1). Thus, results are based on welfare regimes, grouping countries according to the redistributive outcome of their tax-benefit policies. Kammer et al. (2012) use EU-SILC data to measure inequality in pre- and post-government incomes and cluster countries into Social Democratic (DK, FI, SE), Northern Conservative (AT, LU, DE, FR), Liberal (IE, UK) and Southern Conservative (EL, PT, IT, ES) welfare regimes in-line with Esping-Andersen's typology (1990). While Kammer et al. (2012) define the Netherlands as a hybrid case in-between the Social Democratic and the Northern Conservative model. I define the Netherlands as a Social Democratic country following Esping-Andersen's typology. The UK is selected to represent the liberal welfare regime.

The study combines citizenship and country of birth to identify EU nationals who were born outside the country of residence. This information is available for individuals aged 16+. The sample of EU-migrants is furthermore restricted to those who migrated less than

²Referring to a data year before the UK left the EU. Both datasets were the most recent datasets available at the start of this project.

³International civil servants might also be included in other countries but the share is much smaller and often cannot be identified.

15 years ago to ensure that migrants arrived when their home country was part of the EU and migrants born in the EU are only included if they are EU-citizens. EU-migrants can share households with non-migrants, with EU-migrants 15+ years in the country, third country migrants and individuals younger than 16. The native sample on the other hand is restricted to citizens born in the country of residence, solely living with other natives plus household members younger than 16. This restriction is necessary for the decomposition analysis which requires two mutually exclusive groups.

Table 1.1: EU-migrant sample size by country and welfare regime

	All household members	EU-migrant (0-14 years) only	Thereof EU citizens	Thereof EU country of birth	Dominant country of origin
AT	586	321	311	295	NMS, NCON
FR	270	128	114	116	SCON
LU	1,742	991	971	869	SCON, NCON
Northern Conservative	2,598	1,440	1,396	1,280	
DK	187	89	86	86	NMS, NCON
NL	231	103	85	93	NMS, NCON
FI	343	153	124	130	NMS (Baltic)
SE	338	165	124	151	SDEM, NMS
Social Democratic	1,099	510	419	460	
EL	149	76	72	76	n.a.
ES	550	327	311	307	NMS, EU15
IT	889	512	412	504	NMS (BG, RO)
PT	174	84	40	83	n.a.
Southern Conservative	1,762	999	835	970	
Liberal(UK)	2,038	1,172	1,116	1,071	SCON, NMS (PL)

Source: Own calculations based on EU-SILC 2015 and FRS 2014/15 and administrative data retrieved from Eurostat.

Note: Dominant country of origin based on Eurostat information on immigration by year and citizenship 2000-2015. No data available for Greece and Portugal. Data only available for some years for FR (2000-10) and IT (2000-05). NMS = New Member States, NCON = Northern Conservative, SCON = Southern Conservative, SDEM = Social Democratic, n.a. = no external information available

The second caveat of the data is the lack of disaggregated information on single countries of origin which shifts the focus of the analysis to the destination country. Administrative sources offer some information on the heterogeneity of migrant's origins (Table 1.1). The country of origin in Northern Conservative countries is more heterogeneous than in other welfare regimes (NMS, neighbouring countries, Southern European migrants). A high proportion of EU-migrants in Social Democratic countries are from NMS. External information for Southern European countries is limited. New arrivals in Spain are only differentiated between EU15 and NMS. The dominant countries of origin in Italy are Bulgaria and Romania. EU-migrants in the UK are mostly from Southern European countries as well as Poland and other NMS. EU-migrants are furthermore heterogeneous in terms of living with natives (high share in Social Democratic countries) and the share of recent

migrants (highest in the UK) (Table A1.3 in the Appendix).

1.3.1 Income concepts

The two income concepts used are market and disposable incomes. Market incomes (i.e. original incomes) include incomes from labour, investment, properties, private pensions as well as net-inter-household transfers (incl. remittances). Disposable incomes additionally include public pensions and other benefits minus direct taxes and SIC. Both concepts are presented in equivalised terms using the modified OECD-scale.

Absolute values are expressed in monthly Euro adjusted for differences in living standards based on the average EU28 disposable income. It is necessary to adjust income in this way to group countries into the respective welfare regimes. Information on exchange rates and adjustment factors are provided in Table A1.2 in the Appendix.

The analysis focuses on income groups. EU-migrants and natives within each welfare regime are separately ranked by their income and divided into five groups of similar size.

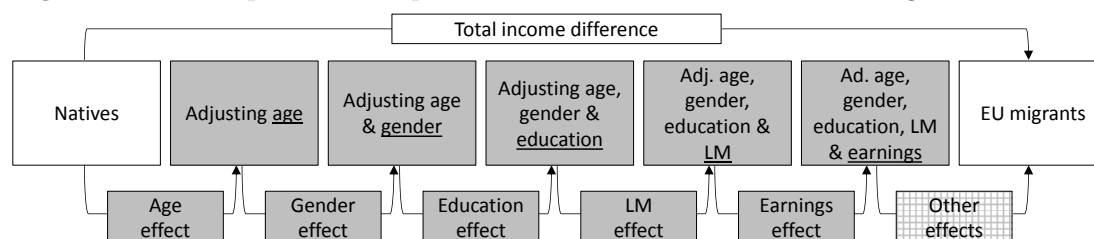
1.3.2 Decomposition

The main contribution of this analysis is the decomposition of EU-migrant/native income differentials. It builds on a widely established strand of literature (reviewed in Fortin et al. 2011) and more specifically on approaches formalised by Bargain and Callan (2010) and Bourguignon et al. (2008). While the former focus on tax-benefit microsimulation to analyse changes in income distribution over time, the latter use a regression approach to analyse differences in household income distributions across countries. Both methods decompose differences in income distributions to separate out the role of various characteristics. This is done by simulating counterfactual income distributions based on altered characteristics while holding everything else constant. The tax-benefit microsimulation approach allows to calculate counterfactual disposable household incomes and to focus on the role of specific tax-benefit element - an important focus of this analysis. A combination of the two methods has recently been applied by Tasseva (2020) who analyses how changes in education have contributed to changes in income inequalities.

The empirical analysis in this contribution builds on these methodologies but transforms them to decompose income differences between two population subgroups rather than income differences over time. The analysis shows the quantitative importance of socio-demographic and labour market characteristics in explaining income differences between natives and EU-migrants.

This is done by calculating several counterfactual scenarios. Selected characteristics of natives are adjusted step-wise, i.e. on top of the previously introduced characteristics, to mirror the structure of the same characteristics in the EU-migrant population. The assessed characteristics are age, gender, education, labour market status and earnings. As visualised in Figure 1.1, the difference between the original disposable income distribution of natives with the counterfactual disposable income distribution of natives shows the share of the difference that is attributed to the characteristic altered in the counterfactual scenario.

Figure 1.1: Decomposition of disposable income differences between EU-migrants and natives



Source: Author's representation

Note: LM refers to labour market status. See the Appendix for a formalisation of this figure.

The size of each effect is path-dependent, i.e. sensitive to the order of introduction to the model (Figari et al. 2015). Thus, while Figure 1.1 shows one potential order of characteristics, results are calculated several times with rotating order of introduction. The average of these sets of counterfactual scenarios is used in the presentation of results.

Two approaches are being used to alter characteristics of the native population to mirror the profile of the migrant population. Gomulka's re-weighting approach (1992) is applied to assess differences due to age, gender, education and labour market status. The re-weighting approach rescales the survey weights of natives to for example fit the age distribution of EU-migrants⁴. For each following counterfactual scenario, the weights

⁴See reweight2 STATA programme (Browne 2012).

of the native population are being altered taking also the distribution of characteristics already included in previous steps into account. The re-weighting furthermore considers the characteristics of all household members and uniformly adjusts the weight of the whole household.

A regression-approach is applied to adjust the earnings of natives to the earnings distribution of migrants as this cannot be achieved by re-weighting. For each country group, earnings are predicted separately for natives and migrants based on their age, gender, work experience, education, number of months receiving earnings as well as country-fixed effects. The betas calculated on the migrant sample are applied to the native sample together with the native-specific residuals adjusted by the ratio of the standard deviation of residuals of both groups to capture a potential variation of the unobservables in the two groups (Bourguignon et al. 2008).

While simply adjusting survey weights does not change the income situation of the household, changes in earnings do. The tax-benefit microsimulation model EUROMOD is used to simulated counterfactual disposable incomes that take changes in earnings as well as the knock-on effects in taxes and social insurance contribution payments and benefit receipt into account.

EUROMOD is an open-access model available for all EU countries and uses reported information on market incomes and the compositional characteristics of household members to simulate disposable household incomes by taking interrelated mechanisms of different tax-benefit elements into account (Sutherland and Figari 2013). The presented results are based on tax-benefit rules as of 30 June 2014 in line with the underlying input data which is based on EU-SILC 2015 and FRS 2014/15.

The standard EUROMOD models - except for Finland - do not take citizenship status into account, thus migrants are treated the same as natives in the tax-benefit simulations. For this analysis, models are adjusted by restricting migrants' eligibility to certain benefits based on information on benefit receipt in the data. These modifications to the models⁵ only concern simulated tax-benefit elements, while access restrictions are already accounted for in non-simulated benefits. These are benefits that cannot be simulated due to lack of

⁵Modifications are documented in Table A1.1 in the Appendix.

information in the survey and are directly taken from the data.

Using EUROMOD, the income difference can be further disaggregated into its components (i.e. different income sources). This allows to analyse in more detail how income sources contribute to the EU-migrant/native income differential and whether this can be explained by differences in socio-demographic profiles or labour market-related characteristics.

1.4 Results

1.4.1 EU-migrant/native income differentials

The first set of results provides a comparison of the income situation of EU-migrants with natives before and after the role of the tax-benefit system has been considered (Figure 1.2). The income levels are presented in living standard adjusted Euros and are thus comparable across countries.

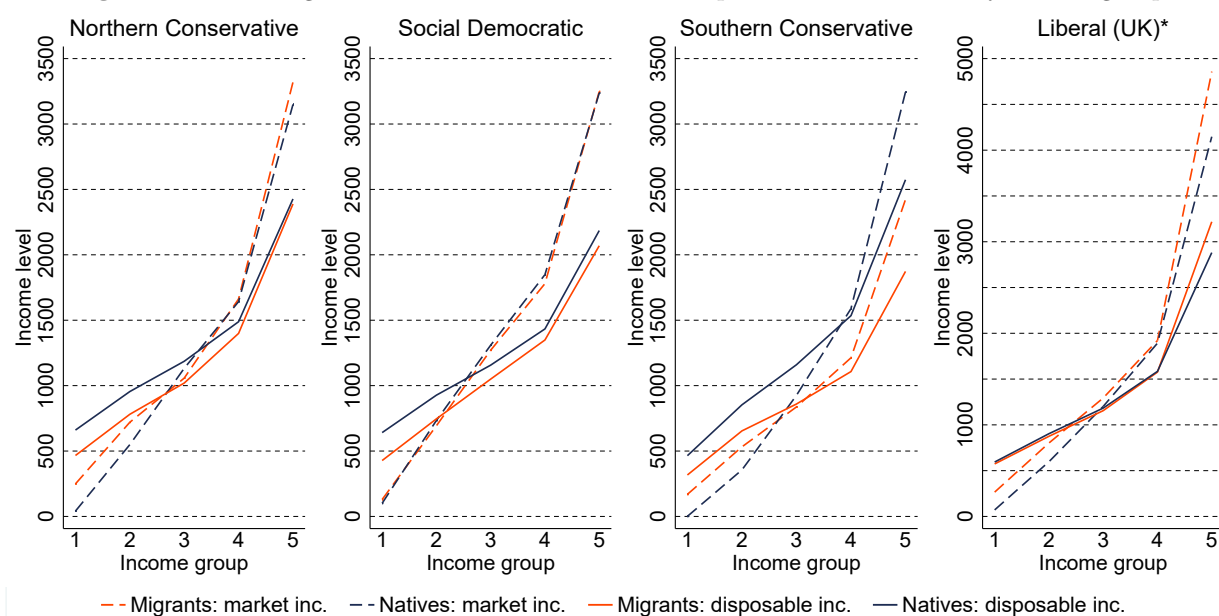
Exploring differences in market incomes shows large within-group but comparably small between-group inequalities in Northern Conservative and Social Democratic countries. The picture is different in the South of Europe with significantly lower incomes of natives at the bottom and higher incomes at the top. EU-migrants living in the UK, on the other hand, have significantly higher market incomes throughout the income distribution except for the 4th income group.

Tax-benefit systems affect the income situation of the two groups differently. Taking the tax-benefit system into account leads to redistribution within subgroups but also to an increase in inequality between natives and EU-migrants, except for the UK. Increases at the bottom are much higher for natives across welfare regimes and decreases much higher for top-income migrants living in Southern Conservative countries.

Reasons for this are manifold. Differences in socio-demographic characteristics and income composition (Tables A1.3, A1.4 and A1.8 in the Appendix) provide a first intuition.

EU-migrants are predominantly younger with higher labour force participation and less likely to receive an old-age pension. They are well educated in Northern Conservative and

Figure 1.2: EU-migrant versus natives market and disposable income levels by income group



Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15

Note: Weighted results. Subgroup and income concept specific income groups. Results are presented in adjusted Euro. * scale adjusted to improve readability. See Figure A1.1 in the Appendix for confidence intervals.

Social Democratic countries, significantly better educated than natives in the UK and the share of low-skilled workers is much lower than natives in Southern Conservative countries.

In terms of family structure, EU-migrants are a heterogeneous group but still less heterogeneous than the majority population throughout the income distribution. While low-income migrants tend to live with their partner and children, this is less the case for natives. High-income EU-migrants fit the typology of Eurostars and affluent lifestyle movers: middle-aged, highly skilled, living with their partner and children. High-income natives on the other hand are more diverse with a comparably high share of pensioners and close-to-retirement individuals.

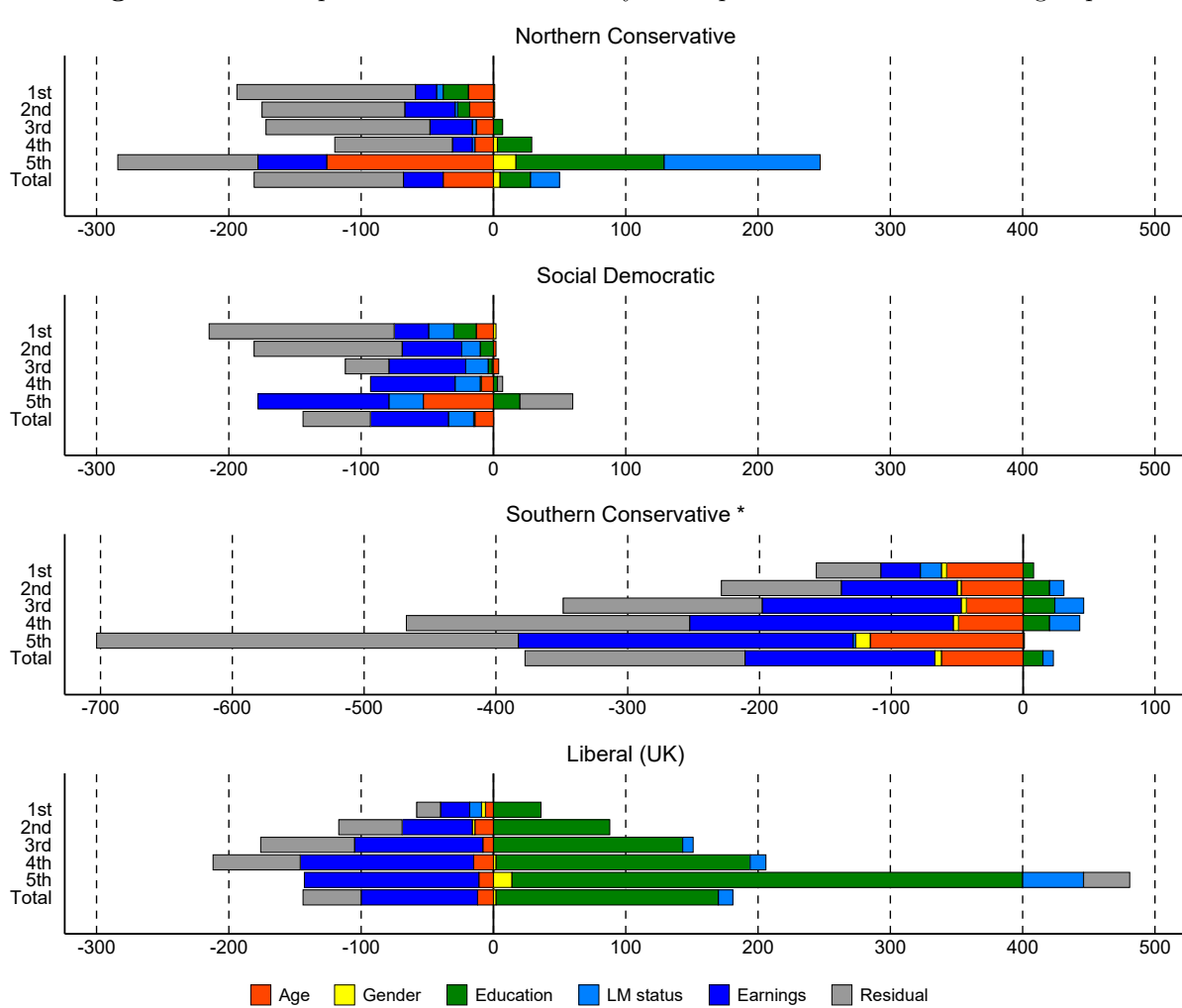
1.4.2 Decomposition of income differences

The extent to which the selectivity of migrants as well as labour market-related factors explain differences in disposable income along the income distribution are tested in the decomposition analysis.

Figure 1.3 decomposes the above presented absolute difference in disposable income for

each income group into the different socio-demographic and labour market characteristics. All results are expressed from the perspective of EU-migrants: negative factors point to difference increasing effects while positive factors reduce the difference. Factors pointing into the same direction add-up and reinforce differences, factors pointing in opposite directions cancel each other out.

Figure 1.3: Decomposed income differences by decomposition factor and income group



Source: Own calculations using EUROMOD, EU-SILC 2015 and FRS 2014/15

Note: * scale adjusted to improve readability. Results are presented in adjusted Euro. See Table A1.6 and A1.7 in the Appendix for underlying data and significance levels.

The first assessed characteristic is *age* which is a mostly negative driver of differences along the income distribution. The age adjustment shows that income levels of natives would generally be lower if they were as young as EU-migrants. The explained difference is relatively small in Social Democratic countries, larger in Northern Conservative, quite

pronounced in Southern Conservative countries and not significant in the UK.

Different from age, *gender* plays a minor and mostly non-significant role. This is not to say that gender does not contribute to income differences within subgroups but that it does not explain differences between the two.

The third adjustment is based on *education* and points to difference increasing effects at the bottom and mitigating effects at the top in Northern Conservative and Social Democratic countries, with overall non-significant results in the North. The education structure of migrants in Southern Conservative countries - where EU-migrants are on average better educated than natives - has a difference reducing effect throughout the distribution except for the top group. This is even more pronounced in the UK where stark differences in skill levels lead to education as a very strong mitigating factor of income differences.

Turning to non-socio-demographic factors, differences in *labour market status* are a significant contributor to migrant-native income differentials in most regimes. The decomposition shows reinforcing effects in Social Democratic countries and overall mitigating effects in Northern Conservative countries. However, this is solely driven by the top of the distribution. Labour market differences in Southern Conservative and Liberal countries show mostly positive but small mitigating effects.

The so far discussed decomposition results compare natives with an adjusted native sample mirroring the migrant-specific profile of the underlying characteristic. As such, results only hold under the assumption that returns on the labour market are the same across subgroups. This assumption is tested in the final decomposition step which focuses on differences in *earnings*.

The regression results that are used to adjust natives' earnings (Table A1.5 in the Appendix) show that coefficients for both natives and migrants mostly point into the same direction, but the size of returns differs. Female EU-migrants in the Conservative regimes earn significantly less than men but also less than native women. Another difference increasing factor are seniority wages in Northern Conservative countries and the slower increase of earnings by age for EU-migrants. While returns for tertiary education are broadly the same for both subgroups, medium-skilled migrants cannot rely on higher returns than lower-educated migrants, pointing to some degree of skill-mismatch.

In sum, these variations in labour market returns mean that earnings are an important contributor of income differentials in most welfare regimes. In Southern Conservative countries and the UK, the mitigating education effects discussed above do not fully compensate for lower earnings due to lower returns of education for EU-migrants. In Northern Conservative countries, earnings lead to a less preferential income situation but with a smaller explanatory power than in other countries.

1.4.3 Disaggregating the role of the tax-benefit system versus market incomes

The final result section provides an in-depth analysis of the income difference by income source. This allows to better understand how specific market incomes drive results and how differences are mitigated by benefits as well as taxes and SIC. The disposable income difference of each income group is disaggregated into differences in employment income (E), self-employment income (S), other market incomes (O), public pensions (P), other benefits (B) and taxes/SIC (T) (Figure 1.4). The sum of the white dots represent the overall disposable income difference shown in the previous graphs.

Additionally, the graph decomposes the differences in each income element into aggregated decomposition factors. This provides insights into the extent to which each of the income source difference can be explained by differences in socio-demographic profiles (age, gender, education) and labour market-related characteristics (labour market status and earnings) or cannot be explained by any of the observables included in the decomposition analysis (i.e. the residual effect).

Focusing on the role of market incomes reiterates the results of Figure 1.2. However, interestingly, different kinds of market incomes play a different role for different income groups in different welfare regimes. The exception is *self-employment income* which plays an overall small role in explaining income differentials across welfare regimes.

An important contributor to lower income differentials at the top is *employment income*. EU-migrants in top income groups have on average higher employment incomes than natives in Northern Conservative countries, Social Democratic countries and the UK.

The situation is different in Southern Conservative countries where EU migrants in the top groups have lower employment incomes.

Across regimes, differences in socio-demographic profiles lead to higher employment incomes while labour market-related characteristics mitigate this effect. The negative role of labour market characteristics is more pronounced in the South of Europe, which together with a substantial negative contribution of unexplained differences leads to lower employment incomes of EU-migrants in higher income groups.

The importance of employment income in explaining income differentials decreases when moving to the bottom of the income distribution and turns negative for the lower income groups in Northern Conservative and Social Democratic countries. The exception is the UK where the positive selection of EU-migrants in terms of education leads to higher employment incomes across the distribution.

Another important - and this time negative - factor for income differences at the top of the distribution are *other market incomes*. EU-migrants are less likely to earn other market incomes which is partly explained by differences in socio-demographic profiles. However, a significant part of the difference remains unexplained and this is especially the case in Northern Conservative and Social Democratic countries.

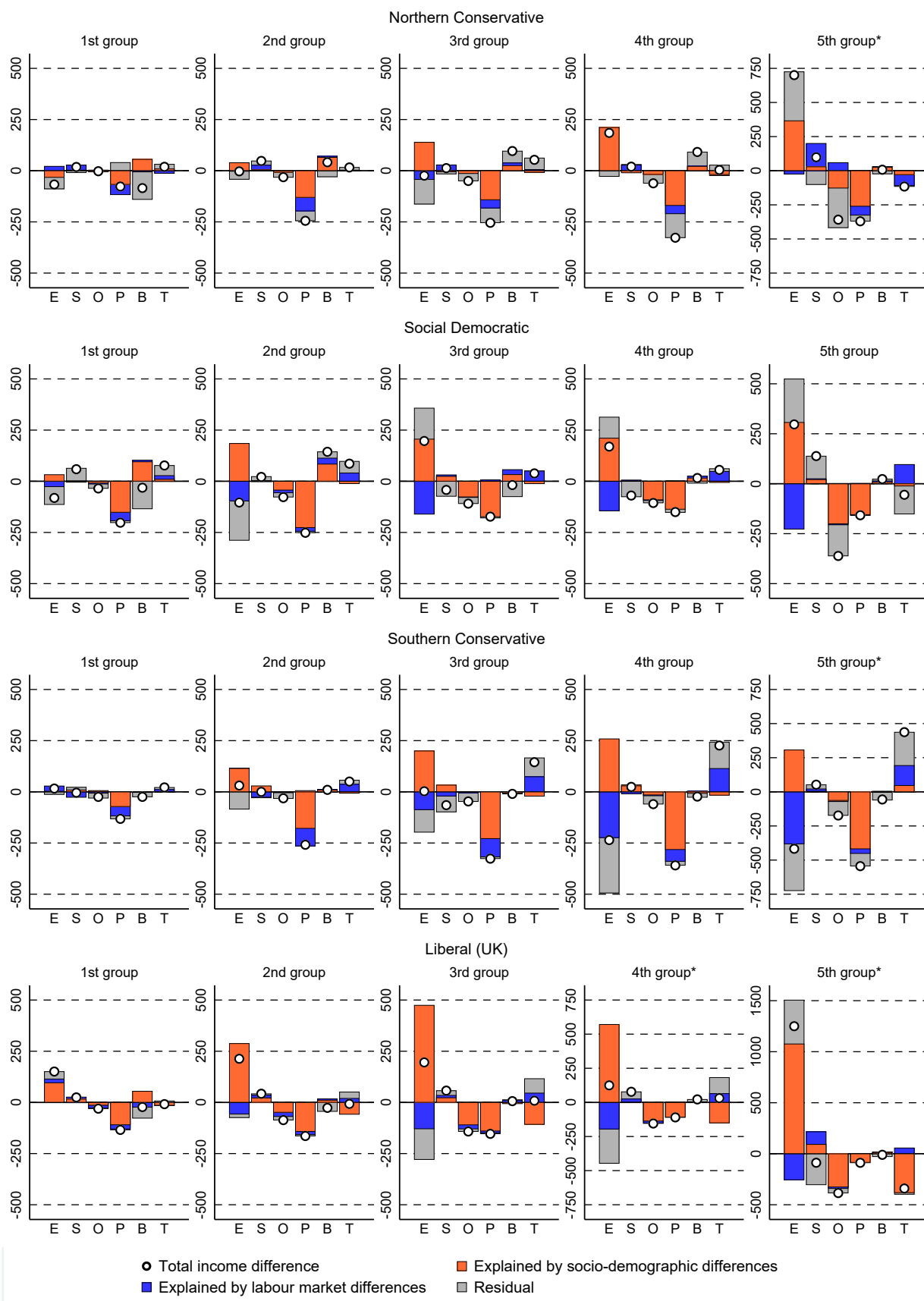
Moving to the role of tax-benefit system shows that an income source that is relevant in explaining EU-migrant/native income differentials across income groups and welfare regimes is *public pensions*. Public pensions are an important negative driver of income differences which is to a large extent explained by differences in age-profiles. EU-migrants are younger and less likely to have reached the statutory retirement age and thus, by definition do not have access to this income source. They are furthermore less likely to benefit from other household member's pension payments. Especially in the South of Europe, pension payments are an important income source for the whole family with almost 50 percent of natives living in a household that receives pensions.

This suggests that *other benefits* which are more likely to provide support to the working-age population and their children play an important role for EU-migrant income groups with lower market incomes. Differences in socio-demographic profiles indeed lead to higher benefit receipt for the bottom income group in Northern Conservative countries,

Social Democratic countries and the UK. However, this positive effect is often counteracted by the negative unexplained residual in all three regimes which even leads to a difference increasing effect in Northern Conservative countries. One potential explanation is access problems to benefits of last-resort, housing benefits and unemployment benefits in those three welfare regimes. Even though welfare states in these countries have the potential to mitigate income differences for those with the lowest incomes, in practice, this is not always the case. In Southern Conservative countries, other benefits play a negligible role in explaining EU-migrant/native income differentials across the income distribution.

Focusing on the contribution side of the tax-benefit system shows that *taxes and SIC* play an important part in mitigating differences in market incomes and public pensions which are liable to personal income tax in most countries. At the bottom of the distribution these mitigation effects are highest in Social Democratic countries. In Southern Conservative countries, taxes and SIC contribute significantly to lower income differences for the top three groups.

Figure 1.4: Disaggregation of income differences by income source, decomposition factor and income group



Source: Own calculations using EUROMOD, EU-SILC 2015 and FRS 2014/15

Note: * scale adjusted to improve readability. Results (y axis) are presented in adjusted Euro. X axis shows the income source: "E" refers to employment, "S" to self-employment, "O" to other market incomes, "P" to public pensions, "B" to other benefits, "T" to taxes/SIC.

1.5 Conclusion

Freedom of Movement provides EU-migrants with access to the labour market and the welfare system in other EU countries. Existing literature shows that EU-migrants are often faced with higher poverty risks and are still not more likely to receive benefits than natives. Relatively little is known about the drivers of disposable income differences and the situation of EU-migrants with higher incomes.

This comparative analysis explores EU-migrant/native disposable income differentials along the income distribution to take the heterogeneity of EU-migrants into account. It uses a decomposition approach together with the tax-benefit microsimulation model EU-ROMOD to analyse drivers of the difference and the role of the welfare state.

The small sample size of EU-migrants in EU-SILC - leading to an analysis of welfare regimes - poses challenges especially when subgroups are heterogeneous across countries (see sensitivity analysis A1.9 in the Appendix). Disaggregated information on the country of origin and larger sample sizes would allow for a more in-depth analysis of different migrant groups within one country. Especially the distinction between NMS-migrants and EU-15 migrants would be interesting and is likely to show different results. Data limitations furthermore did not allow to include Germany which is a very important destination country in the EU. Another limitation of the small sample size and lack of information on the country of origin is that the analysis cannot identify EU-migrants who have migrated to the destination country before they gained full access to EU citizenship rights. The analysis furthermore includes the UK as it has started when the UK was still part of the EU. Even though it is no longer a member state of the EU, the larger sample size of the FRS data provided a better basis for the analysis of the liberal welfare regime than the comparably small sample size of EU-SILC for Ireland.

Despite these data limitations, the methodological approach provides a novel perspective on EU-migrant/native income differentials as it allows to quantify how much of the income difference can be explained by differences in socio-demographic profiles (age, gender, education) versus the role of the labour market (labour market status and earnings).

EU-migrant's access to the labour market and the welfare system is conditioned on the EU-migrant as a worker. The analysis shows that the distribution of market incomes of EU-migrants is often very similar to the distribution of natives. While this sounds like a positive result, it is still surprising given that EU-migrants are significantly younger than natives and thus, more active on the labour market. Additionally, differences increase when moving to disposable incomes - with the exception of the UK - which shows that tax-benefit systems affect the income situation of the two groups differently.

The decomposition analysis sheds light on the drivers of these two findings. Differences in socio-demographic profiles provide a first explanation. The younger-age composition of EU-migrants actually leads to a higher social gradient. Even though socio-demographic characteristics partly result in higher earnings for EU-migrants in selected income groups, younger age profiles still lead to lower disposable incomes due to lower other market incomes for higher income groups and the lower receipt of public pensions across the income distribution. Education can have mitigating effects and partly explains lower income differences at the top of the distribution. In other income groups, education only mitigates income differences if EU-migrants are significantly better educated than the majority population like it is the case in the UK. Additionally, results on returns to education suggest that middle-skilled migrants are often faced with skill-mismatch. Although the Bologna process has improved the situation of highly-skilled EU-migrants, more needs to be done to increase transferability and recognition of non-university qualifications.

The role of labour market-related characteristics is often more pronounced than the role of socio-demographic profiles. Lower levels of earnings lead to higher inequalities between EU-migrants and natives in all regimes. Even though EU-migrants often show higher levels of employment incomes than natives, these levels are not as high as they should be due to the weaker position of EU-migrants on the labour market.

The tax-benefit system partly reduces the difference as the lower earnings but also the lower receipt of pension benefits results in lower taxes and SIC. Less restrictive conditionality may offer an opportunity to lower the costs of job search for EU-migrants. Additionally, institutionalised minimum wage regulations can improve the situation of migrants at the lower end of the distribution (Eugster 2018).

Differences in labour market participation only shows more pronounced reinforcing effects in Social Democratic countries. The significantly higher share of EU-migrants in employment mitigates some income differences at the top in the UK and Northern Conservative countries as well as in Southern Conservative countries in almost all income groups.

Overall, welfare states with more universalistic benefits are better equipped to mitigate income differences if they make sure that all groups have access to the system. The same is true for well-developed and generous social-insurance based systems given that rights acquired in the home country are partly portable to other EU countries. Northern Conservative and Social Democratic countries provide a minimum income standard that mitigates differences in age-structure and earnings. However, the decomposition also highlights that low-income EU-migrants face access problems leading to the relatively high social gradient at the bottom. The South of Europe on the other hand is not equipped to support EU-migrants with lower earnings or outside the labour market. The benefit system is less generous and public pensions provide a very important income source for the whole family, a safety-net that migrants cannot rely on.

Although EU-citizens constitute a privileged migrant group in terms of labour market and welfare access, not all stratification factors - returns to education, outsider status on the labour market and disadvantaged NMS-migrants - have been fully resolved by the EU membership. Non-EU migrants are likely to be confronted with similar structural difficulties but additionally often face stricter conditionality in access to the welfare state.

However, the pressure on EU-migrants to stay in employment makes sure that they do not "over-use" this privileged access to the welfare system. Previous studies have shown that EU-migrants are often net-contributors into the system (they pay more in than they get out) (Christl et al. 2022, OECD 2013a) and are not necessarily more likely than natives to receive benefits (Medgyesi and Pölöskei 2013). The results in this contribution add two important aspects to these findings. First, the contribution that EU-migrants are making into the system could be considerably higher if their returns to observable characteristics would be as high as the returns of natives. Secondly, the lower receipt of benefits is to some extent alarming as the access problem to benefits of last-resort highlights that not all population subgroups have sufficient access to the welfare system.

It is difficult to judge how recent events such as the COVID-19 pandemic or Brexit in the UK have shaped EU-migrant/native disposable income differentials. Nevertheless, results point to structural difficulties of EU-migrants that are very likely to still hold true today. While the FOM benefits specific EU-migrant types, others struggle with the conditionality of these rights. This is expected to pose further challenges in the future as political discourse at the EU level points to growing support for restricting FoM (Roos and Westerveen 2020).

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Appendix 1

Formalisation of decomposition of income differences

Disposable household income is a function of the tax-benefit system for a household with specific socio-demographic and labour market characteristics c , the sum of original incomes x (i.e. market incomes before adding benefits and deducting direct taxes) of all household members and the specific monetary parameters m (benefit levels, tax brackets, social insurance contributions) of the tax-benefit system (Figari et al. 2015).

The difference in income between EU-migrants and the native population ΔY_{actual} can be denoted as:

$$\Delta Y_{actual} = Y_N(c, x, m) - Y_M(c, x, m) \quad (1.1)$$

The starting point for the re-weighting is the further disaggregation of these components. I differentiate between age a , gender g , education/skills s , labour market/economic status l and earnings e as well as residual socio-demographic/income effects r :

$$\Delta Y_{actual} = Y_N(a, g, s, l, e, r, m) - Y_M(a, g, s, l, e, r, m) \quad (1.2)$$

Each of the personal/household characteristic of the native population is re-weighted stepwise together with the already re-weighted characteristics in order to mirror the composition of the migrant population (i.e. minimizing compositional differences between the two subgroups)⁶. The difference between each step is the contribution of the single characteristic to the income difference between the native and the migrant population:

⁶The following categories are applied: age = 0-9, 10-19, 20-34, 35-49, 50-64, 65+; gender = woman, men; education (restricted to those aged older than 20 and younger than 65) = maximum lower secondary education/low-skilled, (post) secondary education/medium-skilled, tertiary education/high-skilled; labour market status = employed, self-employed, unemployed, other inactive.

$$\begin{aligned}
\Delta Y_{actual} &= Y_N(a_N, g_N, s_N, l_N, e_N, r_N, m) - Y_N(a_M, g_N, s_N, l_N, e_N, r_N, m) \\
&\quad \text{Age effect} \\
&+ Y_N(a_M, g_N, s_N, l_N, e_N, r_N, m) - Y_N(a_M, g_M, s_N, l_N, e_N, r_N, m) \\
&\quad \text{Gender effect} \\
&+ Y_N(a_M, g_M, s_N, l_N, e_N, r_N, m) - Y_N(a_M, g_M, s_M, l_N, e_N, r_N, m) \\
&\quad \text{Family effect} \\
&+ Y_N(a_M, g_M, s_M, l_N, e_N, r_N, m) - Y_N(a_M, g_M, s_M, l_M, e_N, r_N, m) \\
&\quad \text{Labour market effect} \\
&+ Y_N(a_M, g_M, s_M, l_M, e_N, r_N, m) - Y_M(a_M, g_M, s_M, l_M, e_M, r_M, m) \\
&\quad \text{Residual effect}
\end{aligned} \tag{1.3}$$

Gomulka's approach is not suitable for adjusting earnings as a change in earnings affects taxes, SIC and results in changes in eligibility for means-tested benefits and hence a change in disposable incomes. A regression approach (Bourguignon et al. 2008) is applied to adjust earnings of the natives to the level of migrants. Using a Mincer equation (Mincer 1958) for each country group, earnings are predicted for natives and migrants separately based on their age a , gender g , work experience w , education/skills s , number of months receiving earnings d as well as country-fixed effects. The betas calculated on the migrant sample are applied to the native sample together with the native specific residuals adjusted by the ratio of the standard deviation of residuals of both groups to capture a potential variation of the unobservables in the two groups.

$$\begin{aligned}
\Delta Y_{actual} &= Y_N(a_N, g_N, s_N, l_N, e_N, r_N, m) - Y_N(a_M, g_N, s_N, l_N, e_N, r_N, m) \\
&\quad \text{Age effect} \\
&+ Y_N(a_M, g_N, s_N, l_N, e_N, r_N, m) - Y_N(a_M, g_M, s_N, l_N, e_N, r_N, m) \\
&\quad \text{Gender effect} \\
&+ Y_N(a_M, g_M, s_N, l_N, e_N, r_N, m) - Y_N(a_M, g_M, s_M, l_N, e_N, r_N, m) \\
&\quad \text{Family effect} \\
&+ Y_N(a_M, g_M, s_M, l_N, e_N, r_N, m) - Y_N(a_M, g_M, s_M, l_M, e_N, r_N, m) \\
&\quad \text{Labour market effect} \\
&+ Y_N(a_M, g_M, s_M, l_M, e_N, r_N, m) - Y_N(a_M, g_M, s_M, l_M, e_M^{a,g,w,s,d,r, \frac{\delta(r_M)}{\delta(r_N)}}, r_N, m) \\
&\quad \text{Earnings effect} \\
&+ Y_N(a_M, g_M, s_M, l_M, e_M^{a,g,w,s,d,r, \frac{\delta(r_M)}{\delta(r_N)}}, r_N, m) - Y_M(a_M, g_M, s_M, l_M, e_M, r_M, m) \\
&\quad \text{Residual effect}
\end{aligned} \tag{1.4}$$

Background information on model adjustments and data

Table A1.1: Country-specific eligibility adjustments for migrants in EUROMOD

AT	Eligibility for family allowance, unemployment benefit, unemployment assistance for migrants restricted to receipt in data, childcare allowance replaced by the non-simulated amount for migrants. Simulation of social assistance benefit switched off due to significant over-simulation
DK	Eligibility for social assistance, housing benefits and old-age pension for migrants restricted to receipt in data
EL	Eligibility for unemployment assistance for long-term unemployed and large family benefit for migrants restricted to receipt in data
ES	Eligibility for child benefit for migrants restricted to receipt in data
FI	Restricting eligibility of guaranteed pension to non-EU-migrants
FR	Eligibility for means-tested disability benefit for migrants restricted to receipt in data
IE	Eligibility for social assistance for migrants restricted to receipt in data
IT	Family allowance for migrants restricted to receipt in data
LU	Education benefit for migrants restricted to receipt in data
NL	No adjustments
PT	Family benefit for migrants restricted to receipt in data
SE	Housing allowance and social assistance for migrants restricted to receipt in data
UK	Take-up assumptions adjusted for migrants for the following benefits: child tax credit, working tax credit, pension credit, income support and council tax benefit

Table A1.2: Applied adjustment factors and exchange rates to calculate adjusted Euros

	Equ. disposable household income	Adjustment rate	Exchange rate	Combine rate
DK	37,659	2.30	7.45	17.17
EL	8,681	0.53	1.00	0.53
ES	15,782	0.97	1.00	0.97
FR	24,751	1.51	1.00	1.51
IT	19,456	1.19	1.00	1.19
LU	38,284	2.34	1.00	2.34
NL	26,055	1.59	1.00	1.59
AT	26,317	1.61	1.00	1.61
PT	9,672	0.59	1.00	0.59
FI	28,788	1.76	1.00	1.76
SE	29,612	1.81	9.10	16.48
UK	23,928	1.46	0.81	1.18
EU28	16,348	.	.	.

Source: Own calculations using EU-SILC 2015. Eurostat for exchange rates.

Note: Results on mean equivalised disposable household incomes based on EU-SILC variable, annual amounts in Euro. The adjustment rate = country specific income divided by EU28 average.

Additional graphs and tables

Table A1.3: Personal and household characteristics of natives and EU-migrants by welfare regime

	Northern Conservative		Social Democratic		Southern Conservative		Liberal (UK)	
	Native	EU migrant	Native	EU migrant	Native	EU migrant	Native	EU migrant
Women	0.519	0.538	0.505	0.536	0.515	0.579**	0.51	0.511
Age	47.770	40.923***	48.141	36.985***	49.987	38.707***	47.86	33.493***
Max. lower 2nd	0.269	0.269	0.261	0.351**	0.508	0.312***	0.621	0.175***
(Post) 2nd	0.459	0.354**	0.416	0.319**	0.286	0.477***	0.203	0.465***
Tertiary	0.272	0.377***	0.322	0.330	0.206	0.210	0.176	0.360***
Employed	0.462	0.540*	0.476	0.545*	0.336	0.530***	0.504	0.691***
Self-employed	0.051	0.095*	0.069	0.103	0.093	0.103	0.07	0.113**
Unemployed	0.060	0.098	0.039	0.094**	0.111	0.192***	0.035	0.046
Inactive	0.427	0.267***	0.415	0.258***	0.459	0.175***	0.391	0.150***
Single earner hh	0.259	0.364**	0.265	0.340*	0.320	0.362	0.242	0.321***
Multiple earner hh	0.489	0.580**	0.512	0.557	0.429	0.560***	0.461	0.627***
HH with pensions	0.412	0.240***	0.593	0.399***	0.486	0.105***	0.425	0.041***
HH with family benefits	0.333	0.387	0.406	0.522***	0.250	0.230	0.321	0.525***
HH with SA/housing ben.	0.281	0.257	0.280	0.313	0.061	0.049	0.255	0.228*
HH with unempl. benefits	0.170	0.243**	0.142	0.195*	0.220	0.419***		
1 adult	0.203	0.124***	0.234	0.138***	0.138	0.147	0.16	0.088***
2 adults	0.340	0.358	0.362	0.372	0.273	0.263	0.365	0.242***
Lone parent	0.043	0.015***	0.035	0.043	0.023	0.036	0.048	0.043
2 adults with children	0.290	0.350*	0.272	0.410***	0.253	0.370***	0.242	0.385***
Other households	0.124	0.153	0.096	0.037***	0.313	0.183***	0.186	0.242**
Without partner	0.396	0.259***	0.381	0.305**	0.416	0.359*	0.387	0.345*
With partner	0.604	0.741***	0.619	0.695**	0.584	0.641*	0.613	0.655*
is native		0.230		0.318		0.114		0.082
is EU migrant		0.458		0.318		0.497		0.505
is other mig.		0.053		0.058		0.031		0.067
EU migrant hh		0.658		0.561		0.820		0.787
Native/EU hh		0.270		0.364		0.142		0.102
Other hh		0.072		0.075		0.038		0.111
0-4 years ago		0.311		0.337		0.130		0.406
5-9 years ago		0.310		0.373		0.432		0.421
10-14 years ago		0.378		0.290		0.438		0.174

Source: Own calculations using Euromod based on EU-SILC 2015 and FRS 2014/15

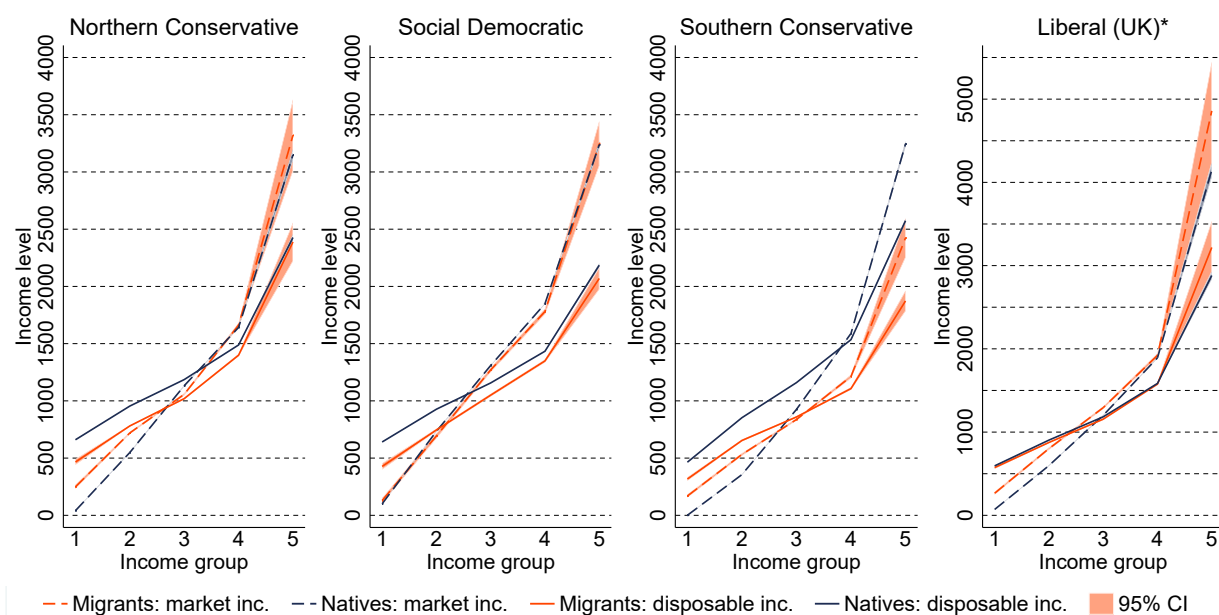
Note: Results only include individuals aged 16+ applying the above described definition of EU-migrants and natives. Household level characteristics also take information from other household members into account. P-values: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ significant difference between native and EU-migrant mean.

Table A1.4: Disaggregation of disposable income by income and tax-benefit element and subgroup

Northern Conservative										
	EMP	SELF	OTH	FAM/EDU,	SA/HOU	PEN	UNEM	TAX	SIC	DISP
1st	267	73	28	60	24	81	27	-22	-72	466
2nd	664	101	7	91	31	48	38	-60	-139	781
3rd	943	82	8	89	31	75	60	-97	-172	1,020
4th	1,494	98	31	52	16	50	109	-198	-253	1,399
5th	2,602	438	161	42	3	255	44	-758	-398	2,389
Migrants	1,193	158	47	67	21	102	55	-227	-207	1,210
1st	334	55	30	66	74	163	51	-44	-70	660
2nd	667	53	38	53	17	297	44	-97	-117	955
3rd	967	70	58	47	8	324	35	-155	-167	1,186
4th	1,310	78	93	41	6	386	30	-236	-219	1,489
5th	1,902	339	519	28	6	631	41	-680	-360	2,427
Natives	1,036	119	147	47	22	360	40	-242	-187	1,343
Total	1,013	113	144	51	25	347	43	-238	-181	1,317
Social Democratic										
	EMP	SELF	OTH	FAM/EDU,	SA/HOU	PEN	UNEM	TAX	SIC	DISP
1st	188	89	6	80	99	31	30	-49	-48	428
2nd	526	66	12	114	128	79	37	-130	-87	746
3rd	1,279	28	6	62	2	46	34	-230	-176	1,050
4th	1,702	18	36	72	2	56	17	-337	-217	1,349
5th	2,705	421	42	50	3	46	49	-930	-316	2,070
Migrants	1,277	124	20	76	47	52	33	-334	-169	1,126
1st	269	30	41	68	96	269	42	-106	-68	641
2nd	630	45	90	52	26	344	44	-186	-116	927
3rd	1,083	71	115	52	11	239	31	-280	-166	1,157
4th	1,533	88	141	49	6	202	25	-387	-223	1,434
5th	2,408	283	403	27	3	231	22	-861	-330	2,186
Natives	1,185	103	158	50	28	257	33	-364	-180	1,269
Total	1,168	103	149	51	34	239	34	-352	-181	1,246
Southern Conservative										
	EMP	SELF	OTH	FAM/EDU,	SA/HOU	PEN	UNEM	TAX	SIC	DISP
1st	184	93	-2	23	8	6	48	-2	-43	317
2nd	468	115	6	25	9	59	78	-37	-69	654
3rd	754	79	2	17	0	61	82	-55	-81	859
4th	963	202	13	18	4	88	57	-115	-123	1,108
5th	1,798	484	23	8	1	111	106	-473	-185	1,873
Migrants	831	194	8	18	5	65	74	-136	-100	960
1st	168	97	23	20	10	167	44	-25	-41	465
2nd	437	115	37	18	7	355	39	-90	-67	853
3rd	751	144	48	14	7	437	39	-180	-100	1,160
4th	1,199	178	73	11	5	488	44	-316	-148	1,535
5th	2,215	432	196	16	4	702	104	-837	-258	2,574
Natives	954	193	76	16	7	430	54	-290	-123	1,317
Total	939	189	69	17	7	385	55	-272	-120	1,270
Liberal (UK)										
	EMP	SELF	OTH	FAM/EDU,	SA/HOU	PEN	UNEM	TAX	SIC	DISP
1st	317	66	15	157	91	3		-54	-21	574
2nd	664	111	17	133	86	8		-92	-51	875
3rd	1,074	138	27	109	43	10		-152	-92	1,156
4th	1,597	207	84	99	3	9		-268	-154	1,577
5th	4,377	359	109	42	2	6		-1,314	-361	3,218
Migrants	1588	175	50	108	45	7		-370	-134	1,469
1st	166	42	46	100	120	189		-55	-11	595
2nd	450	68	104	100	82	234		-95	-40	904
3rd	879	80	169	64	35	210		-165	-88	1,183
4th	1,472	129	239	43	13	142		-287	-166	1,585
5th	3,127	447	494	41	3	104		-1031	-303	2,881
Natives	1,219	153	210	70	51	176		-327	-122	1,430
Total	1,256	164	190	79	53	154		-336	-123	1,436

Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15
Note: Subgroup specific income groups based on disposable incomes. EMP = earnings, SELF = self-employment income, OTH = other market incomes, FAM/EDU = family and education benefits, SA/HOU = social assistance and housing benefits, PEN = public pensions, UNEMP = unemployment benefits, TAX = direct taxes. Results presented in adjusted Euro. Unemployment benefit included in social assistance for the UK due to small sample size.

Figure A1.1: EU-migrants versus natives market and disposable income levels by income group including confidence intervals



Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15

Note: Weighted results. * scale adjusted to improve readability. Subgroup and income concept specific income groups. Results are presented in adjusted Euro.

Table A1.5: Mincer linear regression for predicted earnings by subgroup

	Northern Conservative		Social Democratic		Southern Conservative		Liberal (UK)	
	Natives	EU migrants	Natives	EU migrants	Natives	EU migrants	Native	EU migrant
Women	-0.212***	-0.362***	-0.318***	-0.246**	-0.300***	-0.436***	-0.425***	-0.393***
Age	0.093***	0.065***	0.125***	0.128***	0.067***	0.079	0.049***	0.06
Age2	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001	-0.001***	-0.001*
Work exp.	0.000	0.001	0.001***	0.001	0.003***	0.000	0.004***	0.003**
Work exp.2	0.000***	-0.000	-0.000***	-0.000	-0.000***	0.000	-0.000***	0.000
Max. lower 2nd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(Post) 2nd	0.176***	-0.073	0.222***	0.007	0.324***	0.170	0.192***	0.02
Tertiary	0.457***	0.480***	0.458***	0.419***	0.689***	0.527***	0.684***	0.562***
All year empl.	0.096***	0.354***	0.115***	0.450***	0.370***	0.009	n.a.	n.a.
Constant	5.447***	5.415***	4.425***	3.957***	5.160***	5.722***	5.956***	5.831***
Observations	16,505	1,096	37,148	357	35,620	581	13041	766
R2	0.1696	0.3111	0.2821	0.4019	0.2503	0.1172	0.2384	0.2253
RMSE	0.6857	0.6729	0.7597	0.6894	0.7992	0.9388	0.7542	0.7465
Wald test (Prob <math>\chi^2</math> for reference category: Natives living in native hh)								
Women		0.000		0.700		0.618		0.669
Age		0.021		0.951		0.917		0.791
(Post) 2nd		0.000		0.291		0.583		0.057
Tertiary		0.584		0.809		0.639		0.254
All year empl.		0.000		0.063		0.191		n.a.

Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15

Note: P-values: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Observations with positive earnings only. EU-migrants = moved 0-14 years ago. Incl. country fixed-effects. Number of months in employment not available for the UK. Dependent variable = $\log(\text{wage})$.

Table A1.6: Decomposition of relative disposable income differences between EU-migrants and natives

Northern Conservative	1st	2nd	3rd	4th	5th	Total
Observed difference	-29.4***	-18.2***	-14.0***	-6.0***	-1.6	-9.9***
Share explained	-30.8***	-38.1***	-25.1***	-0.7	178.0	-15.1
by age	-9.8***	-10.4***	-7.7***	-15.6***	-330.9	-28.7**
by gender	0.3	0.4	0.0	3.5	44.3	3.3
by education	-9.9***	-5.3***	3.8***	29.2***	293.5	16.8*
by LM status	-2.9	-0.8	-2.0**	-2.0	308.9	16.5*
by earnings	-8.4***	-22.0***	-19.3***	-15.8***	-137.9	-23.0*
Social Democratic	1st	2nd	3rd	4th	5th	Total
Observed difference	-33.3***	-19.5***	-9.2***	-5.9***	-5.3*	-11.3***
Share explained	-34.2***	-38.0***	-68.7***	-105.1***	-134.0*	-64.4***
by age	-6.1***	1.1*	4.1***	-10.6***	-45.1	-9.5***
by gender	0.9	-0.2	-0.5	-0.5	0.8	0.2
by education	-7.9***	-5.8***	-2.5***	3.9***	17.6	-0.9
by LM status	-8.9***	-7.9***	-15.5***	-21.9***	-22.4	-13.2***
by earnings	-12.3***	-25.3***	-54.4***	-75.9***	-84.8*	-41.0***
Southern Conservative	1st	2nd	3rd	4th	5th	Total
Observed difference	-31.8***	-23.3***	-25.9***	-27.8***	-27.2***	-27.1***
Share explained	-66.7***	-54.2***	-49.9***	-49.5***	-54.4***	-53.1***
by age	-39.3***	-23.7***	-14.1***	-11.5***	-16.5***	-17.5***
by gender	-2.5	-1.7***	-1.3***	-1.0***	-1.5	-1.5
by education	5.5***	9.7***	8.1***	4.6***	0.2	4.1***
by LM status	-10.8***	5.6***	7.4***	5.3***	-0.2	2.1**
by earnings	-19.8***	-44.1***	-50.0***	-46.9***	-36.3***	-40.4***
Liberal (UK)	1st	2nd	3rd	4th	5th	Total
Observed difference	-3.5*	-3.2***	-2.4***	-0.5	11.7*	2.8
Share explained	-12.1	65.2***	156.4***	726	89.4	212.4
by age	-28.4	-48.7***	-30.4	-188	-3.5	-28.1
by gender	-9.9	-6.8*	-2.3	17.2	4.1	5.5
by education	174.1*	306.7***	510.3***	2398.9	114.3*	427.5
by LM status	-43.2	-0.5	26.9***	143.9	13.6	28.5
by earnings	-104.7*	-185.4***	-348	-1646.1	-39.3	-221

Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15
Note: Income groups are based on subgroup specific disposable incomes. P-values: * p_i0.05, ** p_i0.01, *** p_i0.001 significant contribution to EU-migrant/native income differential.

Table A1.7: Income levels of natives (original and after each decomposition adjustment) and EU-migrants by income group

Northern Conservative	1st	2nd	3rd	4th	5th	Total
Natives	660	955	1,186	1,489	2,427	1,343
Natives after total adjustments	601	889	1,144	1,488	2,495	1,323
Adj. by age	641	937	1,173	1,475	2,301	1,305
Adj. by gender	661	956	1,186	1,492	2,444	1,348
Adj. by education	641	946	1,193	1,515	2,539	1,366
Adj. by LM status	655	953	1,183	1,487	2,545	1,365
Adj. by earnings	644	917	1,154	1,474	2,375	1,313
Migrants	466	781	1,020	1,399	2,389	1,210
Social Democratic	1st	2nd	3rd	4th	5th	Total
Natives	641	927	1,157	1,434	2,186	1,269
Natives after total adjustments	568	858	1,083	1,345	2,030	1,177
Adj. by age	628	929	1,161	1,425	2,133	1,255
Adj. by gender	643	927	1,156	1,433	2,186	1,269
Adj. by education	624	917	1,154	1,437	2,206	1,268
Adj. by LM status	622	913	1,140	1,415	2,160	1,250
Adj. by earnings	615	882	1,099	1,370	2,087	1,210
Migrants	428	746	1,050	1,349	2,070	1,126
Southern Conservative	1st	2nd	3rd	4th	5th	Total
Natives	465	853	1,160	1,535	2,574	1,317
Natives after total adjustments	366	745	1,010	1,323	2,193	1,127
Adj. by age	407	806	1,117	1,486	2,458	1,255
Adj. by gender	461	850	1,156	1,531	2,563	1,312
Adj. by education	473	873	1,184	1,555	2,575	1,332
Adj. by LM status	449	864	1,182	1,558	2,572	1,325
Adj. by earnings	435	765	1,009	1,335	2,320	1,173
Migrants	317	654	859	1,108	1,873	960
Liberal (UK)	1st	2nd	3rd	4th	5th	Total
Natives	595	904	1,183	1,584	2,881	1,430
Natives after adjustment	592	923	1,227	1,642	3,183	1,513
Adj. by age	589	890	1,175	1,569	2,870	1,418
Adj. by gender	592	902	1,183	1,586	2,895	1,432
Adj. by education	631	992	1,326	1,776	3,267	1,598
Adj. by LM status	586	904	1,191	1,596	2,927	1,441
Adj. by earnings	573	851	1,086	1,453	2,749	1,342
Migrants	574	875	1,156	1,576	3,218	1,469

Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15
 Note: Subgroup specific income groups based on disposable incomes. Results presented in adjusted EUR.

Table A1.8: Composition of natives (original and overall re-weighted results) compared to EU-migrants by income group

Total	Northern Conservative			Social Democratic			Southern Conservative			Liberal (UK)		
	Native	Adj.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant
Women	0.52	0.49	0.49	0.51	0.51	0.51	0.51	0.52	0.52	0.51	0.49	0.49
Aged 0-9	0.11	0.19	0.19	0.11	0.19	0.19	0.09	0.17	0.17	0.11	0.20	0.20
Aged 10-19	0.11	0.07	0.07	0.11	0.11	0.11	0.09	0.10	0.10	0.11	0.08	0.08
Aged 20-34	0.19	0.30	0.30	0.18	0.25	0.25	0.16	0.27	0.27	0.18	0.42	0.42
Aged 35-49	0.20	0.27	0.27	0.19	0.31	0.31	0.23	0.32	0.32	0.20	0.23	0.23
Aged 50-64	0.20	0.10	0.10	0.20	0.12	0.12	0.21	0.11	0.11	0.40	0.06	0.06
Aged 65+	0.19	0.07	0.07	0.20	0.01	0.01	0.23	0.04	0.04			
Max. lower 2nd (Post) 2nd	0.40	0.46	0.44	0.39	0.47	0.48	0.58	0.48	0.48	0.70	0.40	0.38
Tertiary	0.38	0.26	0.27	0.34	0.25	0.25	0.24	0.35	0.34	0.16	0.32	0.33
Employed	0.22	0.28	0.28	0.26	0.27	0.27	0.18	0.17	0.18	0.14	0.29	0.29
Self-employed	0.38	0.46	0.46	0.39	0.43	0.43	0.29	0.41	0.41	0.41	0.52	0.52
Unemployed	0.04	0.07	0.07	0.06	0.07	0.07	0.08	0.09	0.09	0.06	0.08	0.08
Inactive	0.05	0.06	0.06	0.03	0.06	0.06	0.09	0.14	0.14			
Single earner hh	0.53	0.41	0.41	0.52	0.44	0.44	0.54	0.37	0.37	0.53	0.40	0.4
Multiple earner hh	0.25	0.31	0.29	0.26	0.29	0.30	0.32	0.36	0.36	0.25	0.30	0.34
HH with pension/health ben.	0.53	0.59	0.67	0.55	0.62	0.61	0.45	0.57	0.57	0.46	0.59	0.60
HH with family benefits	0.35	0.18	0.18	0.56	0.44	0.41	0.44	0.16	0.11	0.38	0.10	0.05
HH with SA/housing ben.	0.43	0.51	0.54	0.50	0.66	0.67	0.29	0.38	0.30	0.42	0.57	0.63
HH with unempl. benefits	0.30	0.37	0.32	0.27	0.29	0.31	0.06	0.06	0.06	0.27	0.21	0.25
With partner is EU migrant	0.17	0.22	0.27	0.14	0.18	0.20	0.23	0.29	0.42			
0-4 years ago	0.60	0.60	0.78	0.61	0.59	0.75	0.58	0.61	0.68	0.61	0.64	0.67
5-9 years ago			0.42			0.36			0.42			0.40
10-14 years ago			0.22			0.25			0.22			0.11
EU migrant hh			0.23			0.30			0.36			0.37
Native/EU hh			0.27			0.23			0.36			0.16
Other hh			0.48			0.38			0.69			0.66
			0.41			0.52			0.24			0.16
			0.11			0.10			0.07			0.18

1st	Northern Conservative			Social Democratic			Southern Conservative			Liberal (UK)		
	Native	Adj.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant
Women	0.55	0.55	0.48	0.53	0.53	0.52	0.52	0.52	0.54	0.53	0.5	0.52
Aged 0-9	0.13	0.19	0.14	0.08	0.14	0.18	0.09	0.17	0.21	0.13	0.24	0.26
Aged 10-19	0.15	0.08	0.10	0.12	0.11	0.14	0.13	0.13	0.12	0.13	0.1	0.14
Aged 20-34	0.20	0.35	0.26	0.26	0.41	0.27	0.17	0.26	0.23	0.16	0.39	0.31
Aged 35-49	0.18	0.24	0.22	0.13	0.24	0.26	0.24	0.33	0.33	0.17	0.21	0.23
Aged 50-64	0.18	0.10	0.10	0.15	0.09	0.14	0.19	0.09	0.10	0.41	0.06	0.07
Aged 65+	0.16	0.04	0.17	0.26	0.01	0.01	0.17	0.02	0.01			
Max. lower 2nd (Post) 2nd	0.52	0.56	0.41	0.48	0.48	0.62	0.73	0.61	0.64	0.84	0.48	0.55
Tertiary	0.38	0.28	0.43	0.37	0.32	0.20	0.20	0.30	0.28	0.11	0.38	0.28
Employed	0.10	0.15	0.16	0.15	0.20	0.18	0.07	0.09	0.09	0.05	0.14	0.17
Self-employed	0.24	0.29	0.27	0.18	0.20	0.16	0.13	0.20	0.22	0.17	0.26	0.27
Unemployed	0.06	0.11	0.12	0.06	0.07	0.11	0.09	0.09	0.12	0.06	0.1	0.06
Inactive	0.11	0.15	0.05	0.07	0.18	0.11	0.21	0.29	0.21			
Single earner hh	0.60	0.45	0.55	0.69	0.56	0.62	0.57	0.41	0.44	0.78	0.65	0.67
Multiple earner hh	0.42	0.52	0.56	0.38	0.50	0.44	0.43	0.52	0.55	0.32	0.45	0.69
HH with pension/health ben.	0.30	0.33	0.37	0.22	0.25	0.32	0.24	0.28	0.28	0.11	0.18	0.12
HH with family benefits	0.31	0.12	0.25	0.68	0.53	0.43	0.36	0.11	0.04	0.46	0.13	0.08
HH with SA/housing ben.	0.52	0.53	0.45	0.49	0.63	0.77	0.40	0.42	0.23	0.47	0.67	0.81
HH with unempl. benefits	0.72	0.82	0.24	0.61	0.65	0.56	0.11	0.09	0.09	0.59	0.51	0.6
With partner is EU migrant	0.24	0.33	0.27	0.15	0.26	0.24	0.30	0.36	0.38			
0-4 years ago	0.44	0.44	0.71	0.35	0.31	0.70	0.51	0.52	0.61	0.48	0.49	0.64
5-9 years ago			0.46			0.39			0.36			0.37
10-14 years ago			0.36			0.46			0.14			0.31
EU migrant hh			0.18			0.29			0.35			0.48
Native/EU hh			0.33			0.09			0.42			0.16
Other hh			0.56			0.52			0.82			0.77
			0.20			0.42			0.12			0.07
			0.24			0.06			0.05			0.15

Table A1.8 continued

2nd	Northern Conservative			Social Democratic			Southern Conservative			Liberal (UK)		
	Native	Adj.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant
Women	0.54	0.52	0.52	0.53	0.53	0.54	0.53	0.53	0.54	0.53	0.52	0.53
Aged 0-9	0.12	0.21	0.23	0.11	0.21	0.19	0.08	0.19	0.18	0.14	0.27	0.27
Aged 10-19	0.12	0.07	0.11	0.13	0.13	0.11	0.10	0.12	0.12	0.13	0.12	0.08
Aged 20-34	0.19	0.33	0.19	0.15	0.25	0.28	0.15	0.24	0.23	0.15	0.35	0.41
Aged 35-49	0.19	0.23	0.29	0.16	0.29	0.30	0.20	0.33	0.29	0.17	0.2	0.2
Aged 50-64	0.17	0.08	0.13	0.14	0.09	0.10	0.18	0.09	0.13	0.41	0.05	0.03
Aged 65+	0.21	0.07	0.05	0.30	0.02	0.02	0.29	0.04	0.05			
Max. lower 2nd (Post) 2nd	0.47	0.54	0.49	0.49	0.57	0.54	0.70	0.55	0.50	0.81	0.53	0.43
Tertiary	0.12	0.12	0.22	0.15	0.14	0.13	0.08	0.11	0.09	0.05	0.16	0.2
Employed	0.35	0.43	0.39	0.29	0.36	0.28	0.20	0.34	0.34	0.29	0.4	0.41
Self-employed	0.04	0.06	0.06	0.04	0.07	0.07	0.07	0.08	0.08	0.05	0.08	0.09
Unemployed	0.05	0.06	0.09	0.03	0.07	0.13	0.11	0.15	0.16			
Inactive	0.57	0.45	0.47	0.64	0.51	0.51	0.62	0.43	0.41	0.66	0.52	0.5
Single earner hh	0.26	0.38	0.40	0.28	0.32	0.42	0.37	0.48	0.47	0.32	0.39	0.48
Multiple earner hh	0.49	0.51	0.56	0.43	0.56	0.41	0.32	0.45	0.46	0.31	0.49	0.47
HH with pension/health ben.	0.38	0.19	0.16	0.68	0.54	0.52	0.50	0.15	0.11	0.47	0.15	0.04
HH with family benefits	0.48	0.57	0.69	0.50	0.70	0.61	0.38	0.46	0.38	0.52	0.79	0.77
HH with SA/housing ben.	0.40	0.54	0.52	0.35	0.39	0.69	0.07	0.09	0.12	0.45	0.35	0.41
HH with unempl. benefits	0.21	0.27	0.25	0.18	0.23	0.29	0.25	0.33	0.50			
With partner is EU migrant	0.54	0.51	0.67	0.57	0.50	0.68	0.58	0.60	0.63	0.55	0.61	0.67
			0.34			0.34			0.41			0.39
0-4 years ago			0.22			0.21			0.11			0.39
5-9 years ago			0.29			0.31			0.38			0.4
10-14 years ago			0.22			0.28			0.35			0.17
EU migrant hh			0.44			0.48			0.81			0.76
Native/EU hh			0.46			0.36			0.14			0.07
Other hh			0.10			0.16			0.05			0.17

3rd	Northern Conservative			Social Democratic			Southern Conservative			Liberal (UK)		
	Native	Adj.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant	Native	Ajd.	Migrant
Women	0.51	0.49	0.54	0.50	0.50	0.50	0.52	0.54	0.52	0.51	0.49	0.47
Aged 0-9	0.12	0.18	0.19	0.13	0.22	0.23	0.09	0.18	0.16	0.11	0.21	0.2
Aged 10-19	0.11	0.07	0.07	0.13	0.12	0.13	0.08	0.09	0.12	0.12	0.09	0.11
Aged 20-34	0.20	0.31	0.34	0.18	0.22	0.22	0.16	0.26	0.26	0.17	0.43	0.36
Aged 35-49	0.21	0.24	0.27	0.20	0.34	0.32	0.22	0.32	0.32	0.19	0.23	0.28
Aged 50-64	0.18	0.10	0.09	0.17	0.09	0.10	0.19	0.10	0.10	0.41	0.05	0.05
Aged 65+	0.18	0.08	0.03	0.19	0.02	0.01	0.26	0.04	0.03			
Max. lower 2nd (Post) 2nd	0.40	0.48	0.55	0.41	0.51	0.47	0.62	0.49	0.55	0.74	0.41	0.39
Tertiary	0.19	0.21	0.21	0.22	0.21	0.28	0.13	0.15	0.14	0.1	0.25	0.2
Employed	0.43	0.50	0.45	0.42	0.45	0.50	0.29	0.43	0.46	0.43	0.58	0.56
Self-employed	0.03	0.05	0.05	0.04	0.07	0.05	0.07	0.08	0.04	0.05	0.06	0.08
Unemployed	0.04	0.04	0.12	0.02	0.03	0.04	0.07	0.11	0.12			
Inactive	0.50	0.41	0.38	0.51	0.44	0.41	0.56	0.38	0.38	0.52	0.36	0.36
Single earner hh	0.21	0.23	0.22	0.25	0.27	0.28	0.30	0.34	0.31	0.26	0.27	0.25
Multiple earner hh	0.60	0.69	0.75	0.61	0.69	0.72	0.47	0.62	0.67	0.51	0.69	0.71
HH with pension/health ben.	0.34	0.19	0.29	0.56	0.47	0.43	0.48	0.16	0.11	0.39	0.09	0.05
HH with family benefits	0.45	0.51	0.61	0.57	0.71	0.78	0.31	0.44	0.30	0.47	0.66	0.72
HH with SA/housing ben.	0.19	0.29	0.39	0.21	0.23	0.10	0.05	0.06	0.01	0.21	0.11	0.2
HH with unempl. benefits	0.15	0.23	0.40	0.16	0.18	0.15	0.22	0.28	0.53			
With partner is EU migrant	0.64	0.66	0.74	0.65	0.66	0.76	0.58	0.60	0.71	0.61	0.66	0.64
			0.42			0.34			0.44			0.41
0-4 years ago			0.29			0.22			0.12			0.39
5-9 years ago			0.27			0.34			0.35			0.36
10-14 years ago			0.22			0.24			0.38			0.11
EU migrant hh			0.58			0.38			0.71			0.7
Native/EU hh			0.34			0.53			0.19			0.18
Other hh			0.08			0.09			0.10			0.12

Table A1.8 continued

4th	Northern Conservative			Social Democratic			Southern Conservative			Liberal (UK)		
	Native	Adj.	Migrant	Native	Adj.	Migrant	Native	Adj.	Migrant	Native	Adj.	Migrant
Women	0.51	0.47	0.46	0.49	0.49	0.47	0.51	0.52	0.52	0.49	0.46	0.48
Aged 0-9	0.11	0.17	0.18	0.13	0.22	0.23	0.09	0.17	0.16	0.09	0.15	0.12
Aged 10-19	0.10	0.06	0.03	0.11	0.10	0.08	0.07	0.07	0.05	0.09	0.06	0.05
Aged 20-34	0.20	0.31	0.47	0.19	0.21	0.25	0.17	0.29	0.25	0.22	0.48	0.58
Aged 35-49	0.21	0.29	0.21	0.23	0.34	0.30	0.24	0.32	0.36	0.22	0.25	0.18
Aged 50-64	0.21	0.09	0.08	0.21	0.12	0.13	0.21	0.11	0.11	0.38	0.06	0.07
Aged 65+	0.17	0.08	0.03	0.13	0.01	0.01	0.22	0.04	0.06			
Max. lower 2nd	0.32	0.40	0.50	0.34	0.45	0.44	0.51	0.43	0.43	0.63	0.31	0.29
(Post) 2nd	0.40	0.22	0.26	0.33	0.22	0.25	0.29	0.37	0.38	0.19	0.31	0.33
Tertiary	0.28	0.38	0.23	0.33	0.33	0.31	0.20	0.19	0.19	0.18	0.38	0.37
Employed	0.48	0.59	0.64	0.51	0.54	0.62	0.39	0.52	0.46	0.57	0.68	0.69
Self-employed	0.03	0.04	0.04	0.05	0.05	0.02	0.07	0.08	0.08	0.06	0.06	0.08
Unemployed	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.07	0.12			
Inactive	0.47	0.36	0.29	0.42	0.39	0.33	0.49	0.33	0.34	0.38	0.26	0.23
Single earner hh	0.17	0.18	0.11	0.20	0.19	0.13	0.27	0.25	0.26	0.18	0.22	0.14
Multiple earner hh	0.66	0.75	0.87	0.72	0.80	0.86	0.56	0.72	0.71	0.68	0.77	0.85
HH with pension/health ben.	0.35	0.20	0.06	0.48	0.38	0.37	0.45	0.18	0.17	0.3	0.07	0.04
HH with family benefits	0.40	0.47	0.54	0.55	0.70	0.69	0.25	0.38	0.35	0.4	0.48	0.54
HH with SA/housing ben.	0.10	0.15	0.38	0.12	0.14	0.09	0.04	0.05	0.03	(o)	(o)	(o)
HH with unempl. benefits	0.14	0.15	0.30	0.13	0.16	0.11	0.20	0.25	0.38			
With partner	0.67	0.68	0.86	0.72	0.72	0.80	0.59	0.65	0.67	0.68	0.68	0.71
is EU migrant			0.43			0.32			0.45			0.47
0-4 years ago			0.08			0.22			0.06			0.35
5-9 years ago			0.18			0.28			0.39			0.35
10-14 years ago			0.25			0.21			0.37			0.14
EU migrant hh			0.40			0.17			0.68			0.57
Native/EU hh			0.57			0.70			0.27			0.22
Other hh			0.04			0.13			0.05			0.21

5th	Northern Conservative			Social Democratic			Southern Conservative			Liberal (UK)		
	Native	Adj.	Migrant	Native	Adj.	Migrant	Native	Adj.	Migrant	Native	Adj.	Migrant
Women	0.49	0.44	0.47	0.48	0.48	0.51	0.49	0.51	0.51	0.48	0.46	0.45
Aged 0-9	0.09	0.18	0.19	0.09	0.17	0.14	0.09	0.14	0.13	0.07	0.13	0.15
Aged 10-19	0.09	0.05	0.03	0.08	0.08	0.08	0.06	0.06	0.06	0.08	0.05	0.04
Aged 20-34	0.13	0.19	0.23	0.15	0.16	0.24	0.16	0.29	0.37	0.22	0.47	0.46
Aged 35-49	0.21	0.35	0.35	0.23	0.37	0.40	0.24	0.32	0.31	0.24	0.28	0.29
Aged 50-64	0.27	0.13	0.11	0.31	0.21	0.12	0.26	0.14	0.09	0.39	0.07	0.06
Aged 65+	0.22	0.10	0.08	0.13	0.02	0.01	0.19	0.05	0.04			
Max. lower 2nd	0.27	0.32	0.27	0.24	0.35	0.32	0.34	0.33	0.28	0.48	0.24	0.26
(Post) 2nd	0.30	0.12	0.13	0.30	0.16	0.20	0.27	0.35	0.33	0.21	0.25	0.22
Tertiary	0.43	0.55	0.59	0.46	0.49	0.48	0.40	0.33	0.38	0.31	0.5	0.51
Employed	0.43	0.48	0.53	0.56	0.58	0.57	0.44	0.54	0.55	0.62	0.68	0.68
Self-employed	0.06	0.10	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.08	0.09	0.08
Unemployed	0.02	0.04	0.03	0.02	0.02	0.02	0.04	0.06	0.07			
Inactive	0.49	0.38	0.35	0.33	0.31	0.32	0.44	0.31	0.28	0.3	0.23	0.24
Single earner hh	0.22	0.24	0.17	0.17	0.17	0.24	0.24	0.22	0.21	0.19	0.18	0.14
Multiple earner hh	0.59	0.70	0.80	0.77	0.82	0.76	0.64	0.75	0.76	0.71	0.8	0.84
HH with pension/health ben.	0.38	0.20	0.14	0.40	0.28	0.29	0.41	0.20	0.10	0.26	0.04	0.03
HH with family benefits	0.33	0.45	0.41	0.39	0.55	0.51	0.12	0.20	0.24	0.22	0.23	0.29
HH with SA/housing ben.	0.06	0.08	0.06	0.06	0.06	0.09	0.03	0.04	0.04	(o)	(o)	(o)
HH with unempl. benefits	0.10	0.10	0.10	0.09	0.10	0.20	0.17	0.23	0.30			
With partner	0.72	0.71	0.91	0.78	0.77	0.81	0.64	0.66	0.78	0.73	0.73	0.69
is EU migrant			0.47			0.40			0.44			0.37
0-4 years ago			0.16			0.15			0.13			0.33
5-9 years ago			0.22			0.28			0.34			0.24
10-14 years ago			0.32			0.31			0.29			0.23
EU migrant hh			0.42			0.33			0.44			0.49
Native/EU hh			0.49			0.60			0.47			0.26
Other hh			0.09			0.07			0.09			0.25

Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15

Note: Subgroup specific income groups. Results include all household members except for results on origin of partner and years in the country. Unemployed included in inactive and households receiving unemployment benefits included in households receiving social assistance and housing benefits in the UK due to small sample size. (o) omitted due to small sample size. SA refers to social assistance.

Table A1.9: Sensitivity analysis - decomposition results using different definitions

Northern Conservative									
	Excluding				Including only				
Observed diff.	AT	FR	LU	n.a.	EU hh	0-4	0-9	Non-cit.	Total
Observed diff.	-5.5	-16.6***	-10.2**		-11.3*	-19.8**	-14.2***	-11.7***	-9.9***
Share exp.	80.4	-82.1***	9.1		-37.9	-44.2	-32.1*	5.3	-15.1
by age	-30.6	-29.1***	-28.1**		-21.1*	-39.5**	-41.2***	-18.9**	-28.7**
by gender	9.6	-0.9	3.6		3.4	1.2	2.2	1.5	3.3
by education	37.7	7.5*	19.4*		4.1	-1.1	8.6	12.7*	16.8*
by LM status	57.7	1.0	16.0		2.8	-5.7	5.9	12.1	16.5*
by earnings	6.0	-60.4***	-1.8		-27.1*	0.9	-7.6	-2.1	-23.0*
N migrants	1,119.0	1,312.0	449.0		1,128.0	433.0	1,005.0	1,409.0	1,440.0
Social Democratic									
	Excluding				Including only				
Observed diff.	FI	DK	SE	NL	EU hh	0-4	0-9	Non-cit.	Total
Observed diff.	-11.3***	-10.0***	-11.4***	-13.1***	-21.6***	-21.0***	-14.0***	-12.6***	-11.3***
Share exp.	-63.1***	-63.7***	-64.3***	-63.0***	-46.6***	-38.2***	-48.6***	-70.0***	-64.4***
by age	-7.8**	-6.4*	-5.3	-18.3***	-11.4***	-33.1***	-21.9***	-11.4***	-9.5***
by gender	1.3	-0.7	-1.4	1.5	-0.8	-0.5	-0.7	-0.9	0.2
by education	5.0	6.4*	-23.4***	0.8	-17.9***	-4.8**	-1.7	-11.1***	-0.9
by LM status	-12.3***	-14.4***	-13.8***	-9.4***	-12.1***	-17.4***	-11.7***	-14.0***	-13.2***
by earnings	-49.2***	-48.5***	-20.5***	-37.6***	-4.4*	17.7***	-12.6***	-32.6***	-41.0***
N migrants	357.0	421.0	345.0	407.0	267.0	164.0	375.0	431.0	510.0
Southern Conservative									
	Excluding				Including only				
Observed diff.	ES	EL	PT	IT	EU hh	0-4	0-9	Non-cit.	Total
Observed diff.	-29.2***	-26.3***	-27.3***	-26.3***	-36.7***	-29.7***	-24.9***	-28.1***	-27.1***
Share exp.	-29.6***	-63.2***	-60.1***	-32.8***	-53.4***	-46.2***	-42.7***	-50.9***	-53.1***
by age	-14.0***	-19.2***	-18.8***	-14.7***	-13.8***	-19.6***	-17.3***	-17.3***	-17.5***
by gender	-0.8	-1.5	-1.6*	-1.3	-1.6**	-1.7	-0.7	-1.8*	-1.5
by education	7.2***	6.4***	2.4**	-0.7	-2.9***	5.2***	6.9***	3.8***	4.1***
by LM status	-0.8	1.1	3.2***	4.9***	2.0***	-6.9***	5.1***	3.1***	2.1**
by earnings	-21.3***	-50.1***	-45.4***	-21.1***	-37.1***	-23.1***	-36.6***	-38.8***	-40.4***
N migrants	672.0	923.0	915.0	487.0	762.0	160.0	608.0	860.0	999.0
Liberal (UK)									
	n.a.				Including only				
Observed diff.					EU hh	0-4	0-9	Non-cit.	Total
Observed diff.					-8.0*	1.9	-2.5	-0.4	2.8
Share expl.					-56.7*	350.5	78.4	915.1	212.4
by age					-27.0*	182.6	-31	-195.5	-28.1
by gender					-0.6	-2.3	-1.2	31	5.5
by education					104.9*	532.4	408.2	2577	427.5
by LM status					4.3	90.8	24	188.3	28.5
by earnings					-138.4*	-453	-321.5	-1685.8	-221
N migrants					936	429	947	1116	1172

Source: Own calculations using EUROMOD, based on EU-SILC 2015 and FRS 2014/15
 Note: Income groups are based on subgroup specific disposable incomes. P-values: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ significant contribution to EU-migrant/native income differential. The first set of columns exclude single countries from welfare regimes. The second set of columns restricts the definition of EU-migrant households: EU hh excludes mixed households, 0-4 includes only households with recent movers, 0-9 households with migrants that are less than 10 years in the country and non-cit. excludes EU-migrants with destination country citizenship.

Chapter 2

The added-worker effect as a coping strategy for everyone? - Transitions to activity of inactive ethnic minority women in the UK¹

¹Acknowledgements: I would like to thank Renee Reichl Luthra, Amy Clair and Silvia Avram for their continuous support and feedback as well as the Migration and Ethnicity Working Group at the University of Essex for their valuable comments and suggestions.

Abstract

Even though the 2008 economic crisis exacerbated labour market disadvantages of ethnic groups in the UK, labour force participation of ethnic minority women increased. A broadly studied coping mechanism with unemployment is the added-worker-effect which posits that women join the labour market to compensate for the job loss of their partner. This contribution tests whether increases in female labour supply can be explained by labour market income volatility in the household and studies moderating factors of the added-worker-effect. Findings show that both, the added-worker-effect and its moderating factors are ethnically patterned. Although Pakistani and Bangladeshi women have the greatest theoretical potential to transition, they are the least likely. Indian and other Asian women's added-worker-effect is to some extent moderated by their partnership status, functions as a medium- rather than short-term coping mechanism and is more likely for higher educated women and women without care responsibilities. Even though, African and other black women are the group with the highest transition rates of inactive women and the group most effected by a household member becoming unemployed, they are the least likely to revert to the added-worker-effect as a coping mechanism with income volatility in the household.

Keywords: ethnic minority women, labour market transition, added-worker effect

2.1 Introduction

A large body of literature documents labour market disadvantages in terms of unemployment, under-employment and levels of earnings of ethnic minorities in the UK (Berthoud 2000, Dustmann et al. 2003, Platt 2006, Li and Heath 2008; 2016, Nandi and Platt 2010, Zuccotti and O'Reilly 2019). These disadvantages are only partly based on compositional differences in socio-demographic characteristics of ethnic groups (Longhi 2020) and partly point to discrimination on the labour market (Wood et al. 2009).

The disadvantages are further exacerbated during economic downturns. Li and Heath (2020) find pronounced ethnic differences in unemployment levels at the onset of the 2008 economic crisis and longer-term effects in the years that follow. While unemployment rates for the white majority decreased continuously, they continued to be high for Bangladeshi men, Pakistani women and black Caribbean of both sexes.

Like previous economic downturns, the 2008 economic crisis can be characterised as a 'mancession' that affected male-dominated sectors more than female-dominated sectors (Titan et al. 2021, McKay et al. 2013). Recessions increase the likelihood of women to enter the labour market to buffer the labour market income loss of the household (Blundell et al. 2016). In some countries, this has led to new female breadwinner households (De Rosa 2019), decreases in intra-household inequality (Bargain and Martinoty 2019) and thus, to changes in the decision-making power within the household (Majlesi 2016).

Very little is known about how this affected ethnic minority women given their greater constraints on the labour market and especially women from groups with very high female inactivity rates. Trends in economic status show a significant increase in labour force participation (LFP) for some ethnic minority women from 2009 to 2018 in the UK (Figure 2.1). This is especially the case for Pakistani and Bangladeshi women, the group with the lowest female employment rates in the UK. The increase is mostly driven by decreases in inactivity levels which might indicate that women are joining the labour market to compensate for the job loss of their partners, a within-family coping mechanism called the added-worker-effect (Lundberg 1985).

The main aim of this contribution is to analyse whether the added-worker-effect can indeed explain labour market transitions of inactive ethnic minority women. It exploits the long-term effects of the 2008 economic crisis as families are more likely to revert to within-family insurance strategies in times of crisis (Blundell et al. 2016) as opposed to sitting the situation out during times of economic prosperity (Bryan and Longhi 2013).

The analysis uses UKHLS data to assess whether transitions from inactivity to activity can be explained by labour market income volatility in the household and the extent to which families of different ethnic backgrounds responded in ways aligned with expectations of the added-worker-effect hypothesis. It furthermore tests how characteristics known to mediate LFP moderate the added-worker-effect for different ethnic groups.

It contributes to the literature by providing important insights on the added-worker-effect for households from different ethnic backgrounds. The inter-sectional lens of ethnicity and gender furthermore extends the scarce literature on ethnicity-focused dynamic models of LFP, building on the work of Khoudja and Platt (2018). By taking labour market income volatility of all household members into account, the analysis studies the effect beyond so-called traditional family compositions while previous studies on the added-worker effect have often focused on married couples. The broader scope of this analysis does not only reflect that couple relationships are not necessarily the norm but also that household compositions differ among ethnic minority families. Finally, the analysis focuses on moderating characteristics of the added-worker-effect and how they differ between ethnic groups.

2.2 Literature

The added-worker-effect is a broadly discussed coping mechanism in economic literature. The focus is usually on the job loss of the male breadwinner and the consequential behavioural change of the wife (moving from inactivity to activity or increasing working hours). While theoretical approaches focus on assumptions about rational labour supply (Lundberg 1985), empirical assessments have led to mixed conclusions about the existence and size of the effect (Bredtmann et al. 2018).

Even though previous empirical studies mostly do not focus on ethnic differences specifically or heterogeneous effects in general, several studies allow to draw assumptions on how the effect might be different for ethnic minority women. One major reason why we might expect differences is that the room for manoeuvre between different labour market transitions is restricted by existing patterns of female LFP (Bredtmann et al. 2018). Especially Pakistani and Bangladeshi women show significantly lower activity levels than other ethnic groups in the UK (Khattab 2012; Dale and Shaheen 2010), suggesting that they have a greater scope for the added-worker-effect.

Additionally, increases in activity rates point to a generational shift in labour market attachment (Fouarge et al. 2010) due to higher education levels (Heath et al. 2013, Hook and Paek 2020). The magnitude and mechanisms differ by ethnic group (Dale et al. 2006). While, younger and better educated Pakistani and Bangladeshi women feel more prepared for taking up employment than older generations (Dale et al. 2002), female LFP has already been the norm in black communities even without increases in human capital (Dale et al. 2006). Early labour market attachment furthermore creates work experience which significantly increases the intention of stay-at-home mothers to go back to employment (Gauthier et al. 2016) and shapes the future labour market attachment of young women (Alon et al. 2001). It is however unclear how the role of work experience differs by ethnic minority groups. Nevertheless, better education and previous work experience are expected to positively moderate the added-worker effect but with differences across ethnic minority groups.

On the other hand, flexibility or rather inflexibility patterns of ethnic minority groups provide a fundamentally different hypothesis. Taking a more dynamic approach to study LFP shows that Pakistani and Bangladeshi women have lower labour market entry and higher exit rates than the white majority and other ethnic minority groups (Khoudja and Platt 2018). Thus, even though Pakistani and Bangladeshi women have a higher theoretical potential for the added-worker-effect, they also have the highest constraints in entering the labour market.

Sociological research furthermore shows that households often refrain from adjusting their living and work arrangements and tend to preserve the status quo (Gush et al.

2015). The status quo, although negotiated within the household, is strongly influenced by societal constraints. Especially decisions combining motherhood with LFP are 'socially patterned' (Duncan and Irwin 2004). Women in the UK show high withdrawal rates following childbirth (Valentova 2016) influenced by gender norms and relations that vary by ethnic groups (Kofman 2014). Women with more traditional gender attitudes or with partners with more traditional attitudes are less likely to enter and more likely to exit the labour market (Khoudja and Platt 2018). In the case of Pakistani and Bangladeshi women, the decision to leave the labour force is often already taken prior to having children (Dale and Shaheen 2010; Holdsworth and Dale 1997). This is based on societal norms that portray a clear division of men as the breadwinner and women as the carer of home and family (Dale et al. 2006). Traditional gender norms hinder LFP, especially for this group (Wang 2019), and lead to a bedding in of gender roles and social status (Dale and Shaheen 2010). Black Caribbean and Black African women on the other hand have more egalitarian gender role attitudes (Kan and Laurie 2018) and often consider being in employment as an important dimension of good mothering (Duncan and Irwin 2004). Depending on the group specific norms, these arrangements may restrict or augment the added-worker-effect.

Finally, economic research on the added-worker-effect often assumes that women typically live in a couple relationship and that they can easily move from one economic status to the other. The 2011 UK Census highlights pronounced differences in household types between ethnic groups and a higher number of households with dependent children among ethnic minority families². The gendered and conservative assumptions often applied in added-worker-effect studies exclude this large variation of household types and do not consider childcare constraints to transitions, potentially resulting in a blind spot of the added-worker-effect.

The aim of this contribution is to assess whether labour market income losses of household members lead to an increase in the LFP of inactive ethnic minority women and to show how differences in household types, gender norms and socio-demographic characteristics shape the room for manoeuvre.

²ONS 'Ethnicity facts and figures', retrieved on 10/11/2021

2.3 Methodology

2.3.1 Data

The analysis uses waves 1 to 9 (years 2009 to 2018) of the UK Household Longitudinal Study (UKHLS) (ISER et al. 2019). The nationally representative survey started out with an ethnic minority boost sample of over 4,000 households which was refreshed with an immigrant and ethnic minority boost sample of over 3,000 households in wave 6. The panel design of the survey follows the original sample household, collects rich information on socio-economic measures on all household members and allows to observe labour market transitions and changes in incomes.

UKHLS provides a variety of questions enabling to construct ethnic groups (McFall et al. 2019). The definition used in this study is based on self-reported ethnic group as well as information on the ethnic identity of parents and grandparents. The analysis distinguishes between white (including non-British), Pakistani and Bangladeshi, Indian and other Asian as well as African and other black (including Caribbean) women.

The sample in this study focuses on women who responded in at least two consecutive waves to measure changes in labour market status and income. It is furthermore restricted to women aged 20-55 who are inactive in the current year (t1) and inactive, (self-)employed or unemployed in the following year (t2), excluding women active in both waves as well as those in education or retirement in t1. Only women living with at least one other adult are included to allow for labour market income shocks of other household members. This leads to an analytical sample of 13,251 person-waves and 4,822 women: 3,070 white, 959 Pakistani and Bangladeshi, 451 Indian and other Asian and 304 African and other black women.

Dependent variable and measures of constraints

The dependent variable measures whether an inactive woman in t1 transitions into employment, self-employment or unemployment in t2. The transition into unemployment accounts for disadvantages on the labour market and considers women who are willing to

work but who have not succeeded in finding paid employment. The labour force status is based on the respondent's own assessment of the current economic situation. Inactivity is an aggregate of the following categories: looking after family or home, on a government training scheme, an unpaid worker in a family business, working in an apprenticeship or doing something else.

The labour market income shock of other household members is used as a proxy for the need of the added-worker in the household. It is defined as the aggregated change in labour market incomes of other household members from t_1 to t_2 . The women's own income is excluded from this measure as it dilutes the labour market income shock if women take up employment.

The income shock is defined in relative terms and calculated on gross labour market incomes, i.e. incomes before the welfare state mediates losses. The analysis uses both a continuous measure (0 refers to no income change or increases in incomes, decreases above 50 are top-coded) and a dummy measure of sizeable income shock defined as decreases of 20 percent or more. Models using the continuous measure also include the squared term to allow for non-linear effects.

Classic added-worker-effect studies focus on married women and how they adjust to their husband becoming unemployed. However, this requires that such events are captured in the data to a sufficiently high number (which is not the case) and limits the research to married women living with their nuclear family only. This excludes a high share of other household types quite common among ethnic minority groups who either live without a partner but with their children of employable age (common among African and Caribbean and other black families) or in multi-generational households with more than 2 adults (common among Indian, Pakistani and Bangladeshi families). Thus, focusing on a more household specific rather than partner specific measure takes the varying household compositions into account. A single-couple household restriction furthermore reflects an assumption about household types that focuses on a very particular social norm and not necessarily the lived reality.

The models furthermore include factors that are tested for their moderating effect as well as several control variables.

The first set of characteristics are indicators on care responsibilities. The main indicator assesses whether the women is caring for a sick, disabled or elderly person in or outside the household. All models furthermore control for the number of dependent children (younger than 16 or 16-18 in education, not living with a partner) as well as changes in the number of children below the age of five.

Another set of indicators includes measures on gender norms and religiousness. Following Khoudja and Platt's (2018), "A pre-school child is likely to suffer if his or her mother works" is being used for gender norms and whether religious beliefs are making great/some difference to one's life to assess the role of religiousness.

The models furthermore include variables on personal characteristics known to be important for female LFP such as educational attainment, work experience (ever had a paid job) and age (plus age-squared). Educational attainment is coded based on the British classification of education levels: higher education (degree and other higher degree), A-level, GCSE and other qualification.

Finally, all models include year-fixed effects and control for differences in marital status (married/civil partnership/cohabitation vs. single/divorced/separated/widowed), health status (fair/poor vs. good/very good/excellent), number of adults in the household and migration status. Migration status identifies the generation of the respondent using information on the respondent as well as parent' and grandparent' countries of birth.

2.3.2 Method of analysis

The analysis is based on pooled waves 1 to 9 and models the transitions from t1 to t2 using time-variant and time-invariant characteristics. Most independent variables are measured in t1, the exceptions are the labour market income shock measure and changes in the number of young children. I estimate average marginal effects and predicted probabilities based on separate random-effects models for each ethnic group. Both measures are unaffected by the scalar identification of the coefficients and allow for an interpretation of results in the metric of probabilities (Long and Mustillo 2018). The post-estimation analysis uses the SPost13 package (Long and Freese 2014) and applies the delta method (Agresti 2013) for

the calculation of standard errors as well as two-tailed tests in all analysis. All standard errors account for repeat observations of individuals. All presented results are adjusted for the complex survey design of Understanding Society data using design weights.

Missing information on personal characteristics is imputed based on the value in the previous or following wave if available. Some items are not surveyed in every wave. The item on gender norm was asked in wave 2 and 4, wave 2 values are used to impute values for wave 1 and 3, wave 4 values are used for all other waves. Information on religiousness is available in wave 1, 4 and 8, wave 1 is used to impute wave 2 and 3, wave 4 for wave 5 to 7 and wave 8 for wave 9. Finally, remaining missing values are imputed using hotdeck imputation based on ethnicity, age, gender, marital status and educational attainment.

Sensitivity and robustness checks are carried out throughout the analysis. Alternative measures of labour market transitions considered in the sensitivity analysis are (1) longer transition periods (two and three years instead of one), (2) transitions to employment only, (3) reducing the inactivity definition to family-related categories only (maternity, family care or home, unpaid, family business), (4) excluding maternity leave from the inactivity definition, and (5) using information on labour market income instead of labour market status (from no labour market income to labour market income). Alternative measures of constraint include (1) different cut-off points for the binary labour market income shock measure at 30, 40 and 50 percent, (2) an absolute definition of labour market income shock, (3) a 20 percent shock measure that is based on individual household member losses rather than a measure of aggregate loss, (4) a 20 percent shock of at least one household member rather than a cumulative definition and (5) the decrease in employed household members instead of the labour market income based shock.

The Appendix furthermore presents results based on unweighted random effect models (Table A2.1), results excluding the hotdeck imputations (Tables A2.16-A2.19) and results for different aggregates of ethnic groups (Table A2.2-A2.3).

2.4 Results

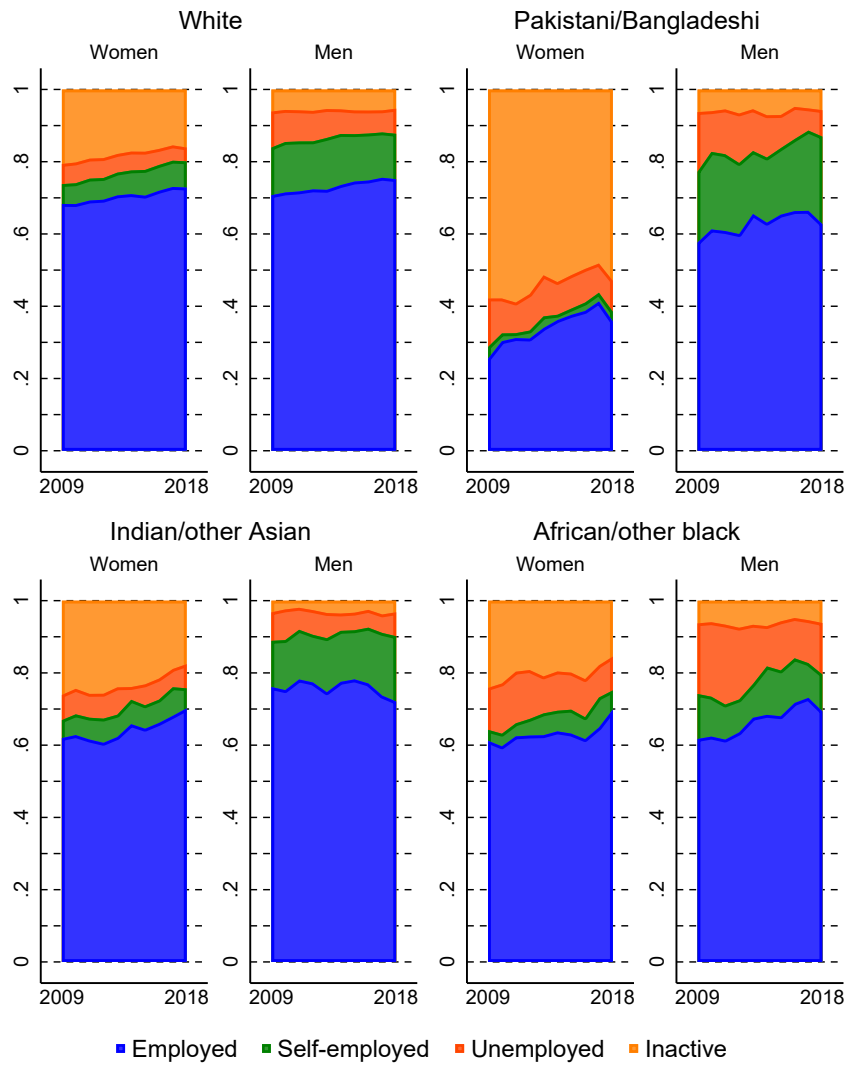
2.4.1 Descriptive overview

The starting point of this study is changes in LFP profiles between men and women and different ethnic groups from 2009 to 2018 (Figure 2.1), i.e. the aftermath of the 2008 economic crisis. The comparison of labour market activity profiles of women highlights the stark differences in employment levels. Pakistani and Bangladeshi women stand out with a very low share of employed and even lower share of self-employed women. However, they are also the group with the highest relative increase over the years, which is mostly driven by single women (Figure A2.1-A2.2 in the Appendix). In contrast, activity levels of men remained comparably stable in the first years and, in most cases, started to increase from 2014 onwards. While these findings are not new, they highlight that the potential for the added-worker-effect is indeed different by ethnic minority groups.

Table 2.1 zooms in on the profile of inactive women using the pooled sample across all years and provides an overview of their personal and household characteristics. Different from the cross-sectional overview in Figure 2.1, it provides actual transition rates of women showing that between 12 to 29 percent of inactive women transition to employment or unemployment from one year to the other. The share is lowest among Pakistani and Bangladeshi women indicating their inflexibility already emphasized in previous studies.

The overview furthermore includes information on the prevalence of labour market income shocks in the household. It is the proxy used to assess the need of the household for adjusting to a new income situation. The average loss in gross labour market incomes of other household members is between 13 and 15 percent. In absolute terms, losses are highest in Indian and other Asian households. In relative terms, substantial income losses of 20 percent or more are most common in Pakistani and Bangladeshi households. Across ethnic groups, income shocks are mostly driven by drops in earnings of other household members rather than unemployment which is usually the focus in the added-worker-effect literature.

Figure 2.1: Economic status by ethnic group, gender and year



Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Individuals aged 20-55 not in retirement/full-time education.

During the period of study, a high share of inactive women is dissatisfied with their income situation - from 50 percent of African and other black women to 31 percent of Indian and other Asian women. Except for African and other black households, a large share has mortgage payments adding pressure to the household's income situation. Many inactive women furthermore live in rented accommodation, with the highest share among African and other black women.

Most women in the sample are inactive due to carrying responsibilities for the family or their home. However, other indicators in the data show a more diverse picture. For example, the share of women who say that they have care responsibilities is much smaller

(less than a third of women in inactivity) and a sizeable share of women across groups reports health issues. This suggests that reasons for inactivity might be manifold and cannot be pinned down to one aspect only.

Ethnic groups are furthermore quite diverse in characteristics that are known to improve LFP like education and work experience. Except for inactive Pakistani and Bangladeshi women, ethnic minority groups comprise of higher shares of highly educated women than white women. Almost 50 percent of Indian and other Asian women have higher education, followed by African and other black women with above 30 percent. The share of women with work experience is around 90 percent for white women, 70 percent for Indian and other Asian women as well as African and other black women. It is lowest among Pakistani and Bangladeshi women with 42 percent.

Also, societal constraints vary across groups. At least 36 percent of inactive women raise concerns about the children's well-being if the mother does not stay at home and this share is as high as 75 percent among Pakistani and Bangladeshi women. Ethnic groups furthermore differ by the role religion plays in their life with only 27 percent of white majority women saying that religion makes a difference, compared to between 77 and 95 percent of ethnic minority women. Especially Pakistani and Bangladeshi women are constrained by conservative norms which might reduce their theoretically higher potential for the added-worker-effect due to higher inactivity levels.

This paradox between higher potential and higher constraint is at the core of the multivariate setting presented in the following sections of the contribution. The first part focuses on the average-worker-effect and the sensitivity of the effect across ethnic groups. The second part analyses the role of moderating factors for the added-worker effect.

Table 2.1: Profile of inactive women by ethnic group

	White	Pakistani/ Bangladeshi	Indian/ other Asian	African/ other black
Personal characteristics				
Average age	38	37	38	36
Higher education	28.3	23.6	47.6	34.0
A level	16.3	12.9	13.7	13.9
GCSE	34.7	22.3	12.1	17.3
Other	9.9	9.9	8.5	14.4
None	10.8	31.2	18.2	20.4
Fair/poor health	21.7	28.6	16.9	23.1
1st generation migrant	9.0	77.2	84.4	73.9
2nd generation migrant	6.6	22.8	15.0	20.7
In partnership/married	89.7	94.8	96.0	73.8
Ever had a paid job	93.3	42.2	70.4	69.5
Household characteristics				
Average household size	4.2	5.6	4.1	4.8
Average number of adults	2.3	2.9	2.5	2.2
Average number of children	1.7	2.3	1.5	2.3
Number of young children (i5) stable	29.4	31.0	28.1	34.4
Number of young children decreased	11.9	13.1	11.2	11.8
Number of young children increased	8.8	11.7	11.9	14.0
No young child in the hosuehold	50.0	44.3	48.8	39.8
Transitions				
Remained inactive	75.0	88.0	77.7	70.7
Transitioned to employment	14.4	4.4	12.7	16.6
Transitioned to self-employment	3.6	1.0	2.9	1.2
Transitioned to unemployment	7.1	6.6	6.7	11.5
Reason for inactivity				
Family care or home	93.7	97.9	98.0	93.5
Unpaid, family business	0.6	0.5	0.0	0.0
Other reasons	5.7	1.7	2.0	6.5
Care responsibilities				
Care responsibilities	31.2	24.3	13.1	21.2
HH member with fair/poor health	22.1	35.9	16.5	19.7
Childcare use	15.6	4.8	8.7	9.6
Financial situation				
Average disposable household income	1,416	1,057	1,449	1,049
Financial situation is difficult	15.8	26.1	18.4	36.1
Dissatisfied with income situation	37.3	35.2	30.5	50.4
Expects situation to get worse	13.1	16.8	11.0	10.0
Mortgage payments	38.6	46.7	44.5	12.7
Rent payments	38.9	31.3	37.2	62.0
Income shock				
Average labour market income loss	13.1	14.4	13.0	14.9
Average LM income loss (absolute)	-390.1	-401.1	-470.4	-301.5
20+ percent income loss	18.1	22.1	19.7	20.7
- Earner left	17.3	9.1	12.6	18.0
- Earner unemployed	10.3	11.1	8.9	15.5
- Earner inactive	6.5	5.8	3.4	4.6
- Drop in earnings	67.8	79.0	79.4	67.2
Social and cultural environment				
Friends: majority same ethnicity	94.3	94.0	82.0	69.6
Friends: majority with job	85.2	50.0	76.9	83.9
Child suffers if mother works	36.1	74.8	65.2	49.9
Husband earn, wife stay home	20.4	46.3	35.3	29.8
Religion makes difference	26.5	94.9	76.5	80.5

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Pooled wave 1-9 data. Inactive women aged 20-55 living with at least one other person aged 16 plus. See Figure A2.3 in the Appendix for trends in transitions.

2.4.2 The added-worker-effect

Table 2.2 shows average marginal effects for women transitioning from inactivity to activity. The basic model includes the income shock measure only, using the continuous measure on income losses. Results do not suggest that income decreases in the household lead to a higher probability of inactive women becoming available for the labour market.

Table 2.2: Average marginal effects for transitions from inactivity

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	+ ethn	+ ind	+ hh	+ fin	+ soc
Ethnicity (Ref.=White)						
- Pakistani/Bangladeshi		-0.18***	-0.17***	-0.16***	-0.16***	-0.15***
- Indian/other Asian		-0.04	-0.08*	-0.09**	-0.08**	-0.08*
- African/other black		0.04	0.01	0.07	0.08	0.08
Age			-0.00	-0.01***	-0.01***	-0.01***
Education (Ref.=None)						
- Higher education			0.09***	0.10***	0.10***	0.09***
- A level			0.11***	0.10***	0.10***	0.10***
- GCSE			-0.01	0.00	-0.00	-0.00
- Other			0.02	0.02	0.01	0.01
Fair/poor health			-0.04**	-0.05***	-0.06***	-0.05***
Work experience			0.06*	0.06**	0.06*	0.06**
Married/with partner			-0.16***	-0.10***	-0.11***	-0.13***
1st generation			0.03	0.02	0.01	0.00
Number of adults				0.02	0.01	0.01
Number of children				-0.05***	-0.05***	-0.05***
Number of young children (Ref.=No)						
- Decreased				-0.09***	-0.10***	-0.11***
- Remained stable				-0.12***	-0.13***	-0.13***
- Increased				-0.27***	-0.27***	-0.27***
HH. income					-0.03*	-0.03*
Mortgage					0.09***	0.08***
Rent					0.05**	0.06**
Dissatisfying income situation					0.01	0.01
Income shock	0.00	0.00*	0.00*	0.00	0.00*	0.00
Religion makes difference						0.01
Mother works, child suffers						-0.05**
Care responsibilities						-0.05***
Year	0.02***	0.02***	0.02***	0.01***	0.01***	0.01***
N	8,984	8,984	7,886	7,886	7,243	7,219

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus. Including squared term for age and income shock.

This, however, changes after including the ethnic group identifiers (Model 2) and controlling for differences in personal characteristics (Model 3) suggesting differences in the added-worker-effect by ethnic minority group and personal characteristics of women. The added-worker-effect is no longer significant after additionally taking household characteristics into account (Model 4) but does matter again once the financial situation of the household is considered (Model 5). This changes again after controlling for differences in the social and cultural environment of women (Model 6). Instead, higher education, previ-

ous work experience as well as lower disposable household incomes and financial obligations (mortgage or rent payments) are significant predictors of transitions. While being older, having a higher number of children and increases in young children in the household or a fair/poor health condition reduce the probability of transition.

Across Model 3 to 6, ethnic minority group differences are rather stable and mostly significant suggesting that differences in transitions cannot be solely explained by differences in composition between ethnic groups. Instead, Pakistani and Bangladeshi women are significantly less likely to move from inactivity to activity even after controlling for other factors that impact labour force participation which highlights their overall low likelihood of taking up a job. Effects are smaller for Indian and other Asian women. African and other black women show a higher, albeit non-significant, likelihood to transition from inactivity to activity than white majority women.

Table 2.3 focuses on ethnic group specific results showing whether the above shown effects also hold within ethnic groups. The results for white majority women are mostly consistent with the total results with two exceptions. The work experience does not seem to matter for white majority women and more importantly, there is a positive added-worker effect.

This is not the case for ethnic minority women. An income shock in the household results in a higher added-worker-effect of white majority women only. Other groups show no significant added-worker-effect and the income-shock regressor shows into the opposite direction for Pakistani and Bangladeshi women.

What stands out is that most other regressors, although mostly pointing into the same direction as for the white majority population, are no longer significant. This is for example the case for education although higher education still shows relatively high average marginal effects for African and other black women. Other educational programmes play a more important role for some groups which might be due to educational degrees acquired in the home country that could not be translated to the UK classification. An empowering factor that clearly plays an important role in increasing transition probabilities is previous work experience for Indian and other Asian women and the level of the household income for African and other black women. Significant hindering factors are a health condition

and a higher number of children for African and other black women. The prevalence and especially the increase of younger children in Indian and other Asian women households significantly reduces their likelihood to transition. For Pakistani and Bangladeshi women, the only significant factor is the role of religion which increases the likelihood of transitioning to activity.

Table 2.3: Average marginal effects for transitions from inactivity by ethnic group

	(1)	(2)	(3)	(4)
	White	PABA	INothA	AFothB
Age	-0.01***	-0.00	-0.01	0.00
Education (Ref.=None)				
- Higher education	0.07*	0.07	0.10	0.25*
- A level	0.08*	0.10	0.07	0.08
- GCSE	-0.03	0.07	0.03	0.16
- Other	-0.02	0.09	0.00	0.13
Fair/poor health	-0.06**	-0.02	0.05	-0.17*
Work experience	0.05	0.04	0.16***	-0.05
Married/with partner	-0.12***	-0.17	-0.23	-0.18
1st generation	0.03	0.02	-0.07	-0.11
Number of adults	0.02	0.00	-0.01	0.01
Number of children	-0.05***	-0.03	-0.05	-0.11***
Number of young children (Ref.=No)				
- Decreased	-0.12***	-0.02	-0.09	0.06
- Remained stable	-0.15***	-0.01	-0.15*	0.02
- Increased	-0.29***	-0.07	-0.29***	-0.18
HH. income	-0.04**	-0.00	-0.02	0.18*
Mortgage	0.10***	-0.01	0.02	0.02
Rent	0.06**	0.02	-0.00	0.07
Dissatisfying income situation	0.01	0.04	0.05	-0.02
Income shock	0.00*	-0.00	0.00	0.00
Religion makes difference	0.01	0.09*	0.01	0.11
Mother works, child suffers	-0.05**	-0.01	0.01	-0.04
Care responsibilities	-0.06***	0.00	-0.04	-0.11
Year	0.01***	0.01	0.01	0.01
N	4,624	1,537	742	316

Source: Own calculations based on UKHLS wave 1-9.

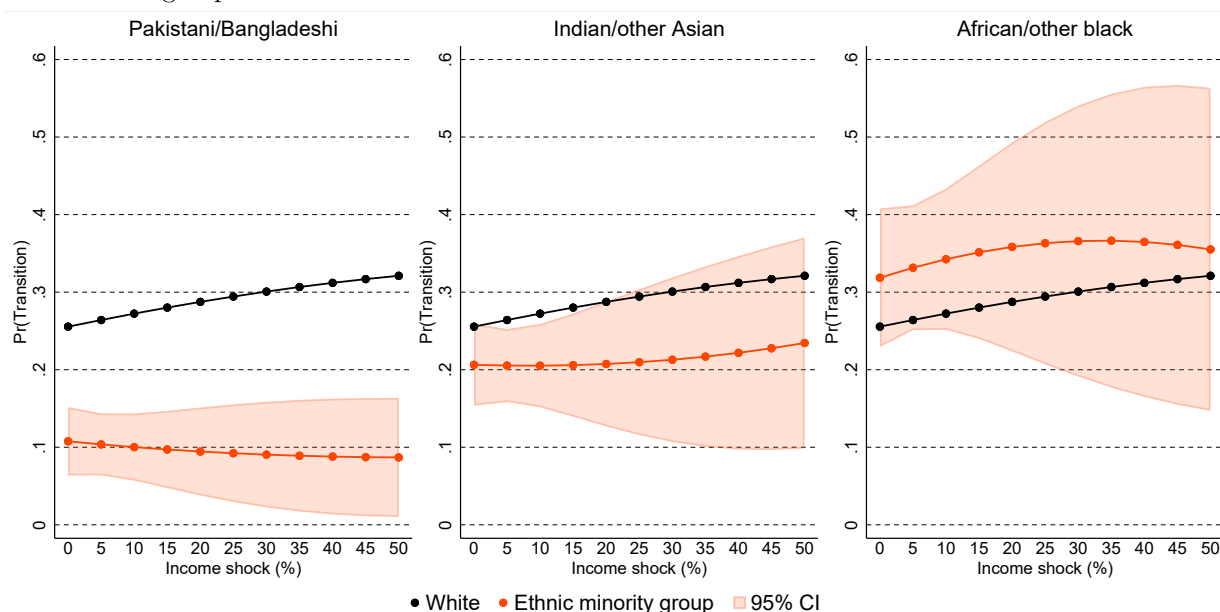
Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus. Including squared term for age and income shock.

As average marginal effects of a continuous variable are difficult to interpret, Figure 2 visualises the predicted probabilities of the income shock by shock size, allowing for a more differentiated interpretation of the continuous measure. For each group, probabilities are computed at income changes ranging from 0 to 50 percent with other variables at their original values. All shown predicted probabilities of ethnic minority women are significantly different from 0 but not significantly different by size of the labour market income shock or significantly different from no shock.

Pakistani and Bangladeshi women are the only group with consistently and significant lower transition probabilities than white majority women across levels of labour market

income shocks. Like white majority women, Indian and other Asian women show an increasing added-worker-effect with size of the income shock but with large confidence intervals at higher shocks. African and other black women show increases in probabilities up to a level of 35 percent and comparably stable probabilities for higher shocks. Again, large confidence intervals lead to a non-significant added-worker-effect and probabilities that are not significantly different from white majority women.

Figure 2.2: Predicted probabilities for transitions from inactivity by size of income shock and ethnic group



Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

The added-worker-effect results also hold if binomial measures with different cut-off points are applied. The first part of Table 2.4 shows the average marginal effect of different binomial income shock measures (defining the income shock at income reductions of 20, 30, 40 and 50 percent) while controlling for all other characteristics included in the previous table. In addition, the sensitivity analysis takes an absolute income shock measure into account as well as measures that are based on the individual income situation of other household members rather than the aggregated income change of the household. Alternatively, the last measure focuses on the change in number of employed household members, diverging from the income-based indicators.

Across measures, the added-worker-effect is significant for white women only and non-

significant for ethnic minority women. Only Indian and other Asian women show comparable, albeit non-significant, effects while the other two groups show mostly negative effects. Especially the small effects for Pakistani and Bangladeshi women are very robust across measures and only show sizeable effects for the alternative measure based on the number of employed household members.

Table 2.4: Sensitivity analysis of the added-worker effect

	(1)	(2)	(3)	(4)
	White	PABA	INoThA	AFoThB
Different income shock measures				
Continuous income shock	0.00*	-0.00	0.00	0.00
20+ percent shock	0.07***	-0.01	0.08	-0.05
30+ percent shock	0.09***	-0.00	0.06	-0.01
40+ percent shock	0.07**	-0.01	0.08	-0.02
50+ percent shock	0.06**	-0.00	0.12	-0.02
Income shock (absolute)	-0.00	0.00	-0.00	0.00
20+ percent shock (losses only)	0.04*	-0.03	0.08	-0.09
Individual with 20+ shock	0.05*	-0.01	0.08	-0.11
Decrease in empl. hh members	0.06*	0.09	-0.00	0.07
20+ percent income shock effect using different transition definitions				
1 year transition period	0.07***	-0.01	0.08	-0.05
2 year transition period	0.07**	0.02	0.19*	-0.05
3 year transition period	0.04	0.02	0.11	-0.06
Transition to employment only	0.07***	0.00	0.09	-0.07
Inactive due to family reasons only	0.07***	-0.01	0.08	-0.05
Transition to paid job	0.04**	-0.02	0.04	-0.03

Source: Own calculations based on UKHLS wave 1-9.

Note: Average marginal effects for weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus. Incl. controls for all other characteristics of Table 2.3. Each row is the results of a separate model. The full random-effect results of each model are shown in the Appendix (Table A2.4-A2.11).

The second part of Table 2.4 provides an additional sensitivity analysis that tests various transition definitions. Thus rather than changing the shock measure, the outcome measure is tested for its sensitivity. The tests use the 20-percent income-shock measure - as it is generally easier to compare differences in effect sizes of binomial indicators - and shows how it affects alternative transition probabilities. The alternative transition probabilities either vary in terms of transition period or in the type of transition considered as an average-worker-effect.

Again, results for white majority women are quite consistent independent of the applied transition definition. However, the likelihood of white women to transition from inactivity to activity decreases the longer the transition horizon and is no longer significant after 3 years. Thus, for white majority women the added-worker-effect can be interpreted as an

intermediate rather than a longer-term within-family coping strategy.

The transition period only changes results for Indian and other Asian women but not for the other two ethnic minority groups. Indian and other Asian women show a significant added-worker-effect if a 2-year transition period is applied, suggesting that the added-worker effect is not an immediate reaction to income losses but a medium-term coping mechanism of households.

Also, the reduced sample definitions (excluding transitions to unemployment and focusing on inactivity due to non-family related reasons only) show significant added-worker-effects for white women only.

Overall, the stability of the results confirm that ethnic minority women face difficulties in moving from inactivity to activity as a coping mechanism to labour market income losses of the household and that this is largely independent of the applied income loss and transition definition. The exception are Indian women who are responsive if the transition period is longer.

2.4.3 Moderating factors

Table 2.3 provided some evidence for mediating factors for ethnic women's transitions to the labour market similar to those identified in the literature. Examples are education, previous work experience, health condition or household characteristics which could potentially also lead to a higher added-worker-effect.

Even though the evidence for the added-worker-effect among ethnic minority groups is very weak, it might still be a coping mechanism with income volatility in the household if moderated by these characteristics. Table 2.5 shows the average marginal effect of the 20-percent income-shock if interacted with selected moderating factors of transitions to the labour market.

While results for white women show significant interaction effects with moderating factors this is not the case for ethnic minority women. Partly due to small sample sizes, the coefficients do not achieve statistical significance and are therefore indicative only. The table includes the confidence intervals of each effect to show the extent to which non-

significant results still provide an indication of moderating effects. The following discussed effects are either significant or show comparably small confidence intervals.

Table 2.5: Average-worker-effect after accounting for moderating factors

	(1) White		(2) PABA		(3) INoThA		(4) AFoThB	
	Effect	CI	Effect	CI	Effect	CI	Effect	CI
Base	0.07***	[0.03,0.11]	-0.01	[-0.08,0.07]	0.08	[-0.04,0.20]	-0.05	[-0.21,0.11]
Aged 25	0.02	[-0.06,0.09]	0.06	[-0.14,0.26]	0.15	[-0.20,0.50]	-0.12	[-0.33,0.09]
Aged 40	0.09***	[0.04,0.15]	-0.03	[-0.12,0.06]	0.06	[-0.10,0.22]	0.04	[-0.18,0.27]
Aged 55	0.03	[-0.03,0.10]	-0.01	[-0.12,0.11]	0.09	[-0.18,0.35]	-0.25	[-0.61,0.12]
Higher education	0.12**	[0.04,0.20]	0.01	[-0.14,0.16]	0.20	[-0.00,0.39]	0.07	[-0.22,0.36]
A Level	0.09	[-0.01,0.19]	0.00	[-0.20,0.20]	0.12	[-0.16,0.40]	0.03	[-0.38,0.43]
GCSE	0.03	[-0.03,0.08]	-0.02	[-0.17,0.13]	0.04	[-0.29,0.38]	-0.23	[-0.54,0.08]
Other	-0.04	[-0.14,0.05]	0.05	[-0.27,0.37]	-0.09	[-0.29,0.11]	-0.09	[-0.56,0.38]
None	0.18**	[0.06,0.29]	-0.03	[-0.10,0.04]	-0.03	[-0.27,0.21]	-0.14	[-0.38,0.10]
Good health	0.06**	[0.02,0.11]	-0.01	[-0.09,0.08]	0.05	[-0.08,0.18]	-0.06	[-0.24,0.13]
Fair/poor health	0.08*	[0.01,0.16]	0.00	[-0.13,0.14]	0.23	[-0.06,0.52]	-0.04	[-0.32,0.24]
No work experience	0.15*	[0.02,0.29]	-0.02	[-0.11,0.07]	0.12	[-0.09,0.33]	-0.03	[-0.44,0.38]
Work experience	0.06**	[0.02,0.10]	0.01	[-0.10,0.11]	0.07	[-0.07,0.21]	-0.06	[-0.22,0.11]
No partner	0.02	[-0.10,0.15]	-0.16	[-0.78,0.46]	0.00	[0.00,0.00]	-0.02	[-0.44,0.40]
With partner	0.07***	[0.03,0.11]	-0.00	[-0.08,0.07]	0.11	[-0.01,0.23]	-0.06	[-0.21,0.10]
No child	0.09*	[0.01,0.16]	-0.09	[-0.28,0.10]	0.07	[-0.18,0.33]	-0.32	[-0.71,0.07]
1 child	0.08**	[0.03,0.12]	-0.04	[-0.16,0.07]	0.08	[-0.07,0.23]	-0.22	[-0.50,0.06]
2 children	0.07**	[0.03,0.10]	-0.01	[-0.08,0.07]	0.08	[-0.04,0.21]	-0.10	[-0.29,0.09]
3 children	0.05*	[0.00,0.10]	0.01	[-0.06,0.09]	0.08	[-0.09,0.26]	-0.01	[-0.17,0.16]
No young child	0.08**	[0.02,0.14]	-0.04	[-0.15,0.07]	0.04	[-0.15,0.22]	-0.08	[-0.33,0.17]
Decrease	0.17**	[0.06,0.28]	0.03	[-0.17,0.23]	0.10	[-0.22,0.43]	-0.17	[-0.61,0.26]
Stable	0.02	[-0.04,0.08]	0.02	[-0.11,0.14]	0.17	[-0.05,0.39]	-0.00	[-0.25,0.24]
Increase	0.03	[-0.04,0.10]	-0.01	[-0.15,0.14]	0.00	[0.00,0.00]	-0.00	[-0.41,0.40]
No care responsibilities	0.05*	[0.00,0.09]	0.01	[-0.08,0.09]	0.12	[-0.01,0.25]	-0.03	[-0.22,0.16]
Care responsibilities	0.11***	[0.04,0.17]	-0.04	[-0.17,0.08]	-0.15	[-0.34,0.04]	-0.10	[-0.35,0.14]
Liberal gender norms	0.09***	[0.04,0.14]	-0.04	[-0.17,0.10]	0.07	[-0.12,0.26]	-0.12	[-0.33,0.09]
Traditional norms	0.03	[-0.02,0.09]	0.00	[-0.08,0.09]	0.09	[-0.06,0.24]	0.01	[-0.21,0.23]
Not religious	0.07**	[0.02,0.11]	0.01	[-0.15,0.18]	0.17	[-0.08,0.41]	-0.04	[-0.32,0.25]
Religious	0.07	[-0.01,0.14]	-0.01	[-0.08,0.07]	0.06	[-0.08,0.19]	-0.06	[-0.24,0.12]

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus. Each row presents the result of a separate model controlling for the same characteristics as in Table 2.3, except for the continuous income measure which is replaced by the 20 percent income shock measure. Each line shows the average marginal effect of the income shock when interacted with the specified characteristic. Full random-effect results are shown in Table A2.12-A2.15 in the Appendix.

It is striking that the added-worker-effect for Pakistani and Bangladeshi women does react to one of the moderating factors, after it was completely non-sensitive to any of the tested alternative definitions. Younger age seems to make a transition after an income shock in the household more likely and shows an effect size similar to the baseline effect of white women. Younger age also plays a role for Indian and other Asian women while this is not the case for African and other black women or white majority women. Both of the latter groups show higher moderating effects for middle-aged women.

A factor relevant for Indian and other Asian women is partnership. Similar to white majority women, they are more likely to show an added-worker-effect if they have a partner.

This suggests, that it is not the income volatility as such but the income situation of the partner that leads to an added-worker-effect. Additionally, the added-worker-effect of Indian and other Asian women reacts to higher education and care responsibilities. The role of higher education is also pronounced among African and other black women, as well as white majority women.

The added-worker-effect is negative for African and other black women and this is also the case for most moderating factors. Some positive effect can be found for middle-aged women and higher educated women as mentioned above. Interestingly, African and other black women are the group with the highest transition of inactive women and the group that is most effected by a household member becoming unemployed (Table 2.1). Still, this higher share of women transitioning cannot be explained by the added-worker-effect.

2.5 Conclusion

This study examines whether the increase in activity levels of ethnic minority women in the aftermath of the 2008 economic crisis can be explained by the added-worker-effect. The added-worker-effect is a broadly discussed within-family coping mechanism in economic literature which posits that women take up employment to compensate for the job loss of their partner.

The analysis uses UKHLS data wave 1 to 9 and exploits the ethnically-patterned long-term unemployment effects of the 2008 economic crisis. It applies a more general definition of the added-worker-effect by focusing on gross labour market income volatility of all other household members in order to take differences in living arrangements between ethnic groups into account. It furthermore focuses on various factors of labour market transitions and how they moderate the added-worker-effect to account for (ethnic) constraints to transition out of inactivity.

As such, this study contributes to the existing added-worker-effect literature with a specific lens on differences by ethnic minority groups and a sociological perspective that goes beyond the norm of couple relationships. The empirical approach provides further insights into dynamic models of LFP, building on the work of Khoudja and Platt (2018),

but with a stronger focus on the added-worker-effect.

Results highlight that inactivity levels vary by ethnic minority group leading to different starting points for the added-worker-effect. This is however not translated into a higher added-worker-effect for those groups with higher theoretical potential to transition. On the contrary, Pakistani and Bangladeshi women who have very high inactivity rates are the least likely to transition even though Pakistani and Bangladeshi men are among the group with the highest unemployment levels during the first years of the analysis. This shows that although countries with lower female LFP show higher added-worker-effects (Bredtmann et al. 2018), this is not necessarily the case for all population subgroups within these countries.

The added-worker-effect is only found in the overall sample and for white women. This holds for sensitivity tests on various income shock measures and transition definitions. Ethnic minority women are faced with different constraints than the white majority population and the idea of the added-worker-effect fails to take these differences and structural impediments into account. Results for Indian and other Asian women furthermore suggest that increases in female labour supply might actually be a medium-term within-family coping mechanism rather than a short-term effect.

Results are quite different for African and other Black women. Especially Caribbean and other black women have already been more likely to participate in the labour market at the onset of the economic crisis in 2008 and thus, had a lower theoretical potential for the added-worker-effect. In addition, the share of inactive women with poor or fair health in this group is considerably higher than in other ethnic groups and has been shown to be an important negative mediator of African and other black women's labour market transitions. Unfortunately, the sample size of this group is very small which makes significant moderating effects of the added-worker-effect unlikely. The role of the health status for this specific ethnic group might valuably be tested in future studies.

The small sample size is a general concern for research on different ethnic minority groups. Even though, UKHLS data includes boost samples, it is still not possible to assess each group separately. In addition, using weights further reduces the sample size but is important to provide representative results. Additional sensitivity analysis available

in the Appendix shows unweighted results and results for aggregated and disaggregated ethnic minority group definitions. Results calculated on unweighted data show a significant added-worker-effect for Indian and other Asian women when households experience an income shock of at least 20 percent. Using aggregated and disaggregated categories for ethnic minority groups do not show a significant added-worker-effect. Thus, the small and negative income shock effects of Pakistani and Bangladeshi as well as African and other Black women are not sensitive to any of the definitions.

While circumstances and life-course events that lead to labour market transitions are ethnically-patterned, the same is true for moderating factors of the added-worker-effect. Not all characteristics that lead to a higher transition probability also provide a better starting point for the added-worker-effect. Even though married women or women in a partnership are less likely to transition overall, being married or in a partnership increases the added-worker-effect for white women and Indian and other Asian women. While this is in line with findings by Khoudja and Platt (2018) who show that changes in the partner's income play an important role for entering the labour market, the results in this study reiterate that this is specifically linked to the partnership status and that the added-worker-effect is not necessarily a coping-mechanism with income volatility of any household member in this ethnic group.

The lower labour force transition rates and the lack of the added-worker-effect of some ethnic minority women highlight that strategies to increase female LFP of different ethnic groups needs to focus on creating labour market attachment before women exit the labour market. The lower probability of transitions for inactive Pakistani and Bangladeshi women (multivariate results) despite the overall increase in employment rates (descriptive results) suggests that these changes in participation levels are driven by younger generations entering the labour force rather than by transitions of inactive women themselves. This on the other hand confirms the role of the generational shift (Dale et al. 2006). The scarring effects of experiencing not being in employment, education or training at young working-age on later employment probabilities vary by ethnic group and are significantly stronger for Pakistani and Caribbean women (Zuccotti and O'Reilly 2018). The high degree of stickiness of inactivity can potentially be reduced by work experience of younger Pakistani

and Bangladeshi women as research has shown that this can help young women to move back to activity after an inactivity spell (Gauthier et al. 2016). This is also emphasized by the role of previous work experience for Indian and other Asian women in this study. Greater work experience among more women within the ethnic group can furthermore help to loosen rigid gender norms and to reduce societal constraints on women. In a similar vein, higher education is an important moderating factor of the added-worker-effect among white women and Indian and other Asian women who are significantly better educated than other ethnic groups.

An important prerequisite for female LFP is an improved labour market situation with reduced disadvantages towards ethnic minority groups as well as affordable childcare provision that empower women to take up employment. Except for Pakistani and Bangladeshi women, the household composition matters and children in the household negatively affect the likelihood to transition as well as the added-worker-effect to some extent. However results in this analysis show that the availability of childcare through childcare provision or other family members positively mediates labour supply for white women only, which could be related to ethnic differences in attitudes towards childcare as well as part-time employment (Dale et al. 2002).

Finally, given that ethnically-patterned labour market consequences of economic shocks are a recurrent phenomenon in the UK (Li and Heath 2008; Lindley 2005), it is vital to closely follow the consequences of the COVID-19 pandemic for ethnic minority women. Even more so as research on the short-term consequences has already highlighted the disproportional impact on ethnic minority groups (Platt and Warwick 2020). Political action to counteract an economic crisis in the UK has often focused on austerity measures rather than increases in taxes to fund higher social spending (McKay et al. 2013). Women are more likely to be claimants of benefits, lone parents and users of public services and thus, more affected by spending cuts. McKay et al. (2013) argue that this has often reversed the initial 'mancession' to more severe consequences for women on the long-run.

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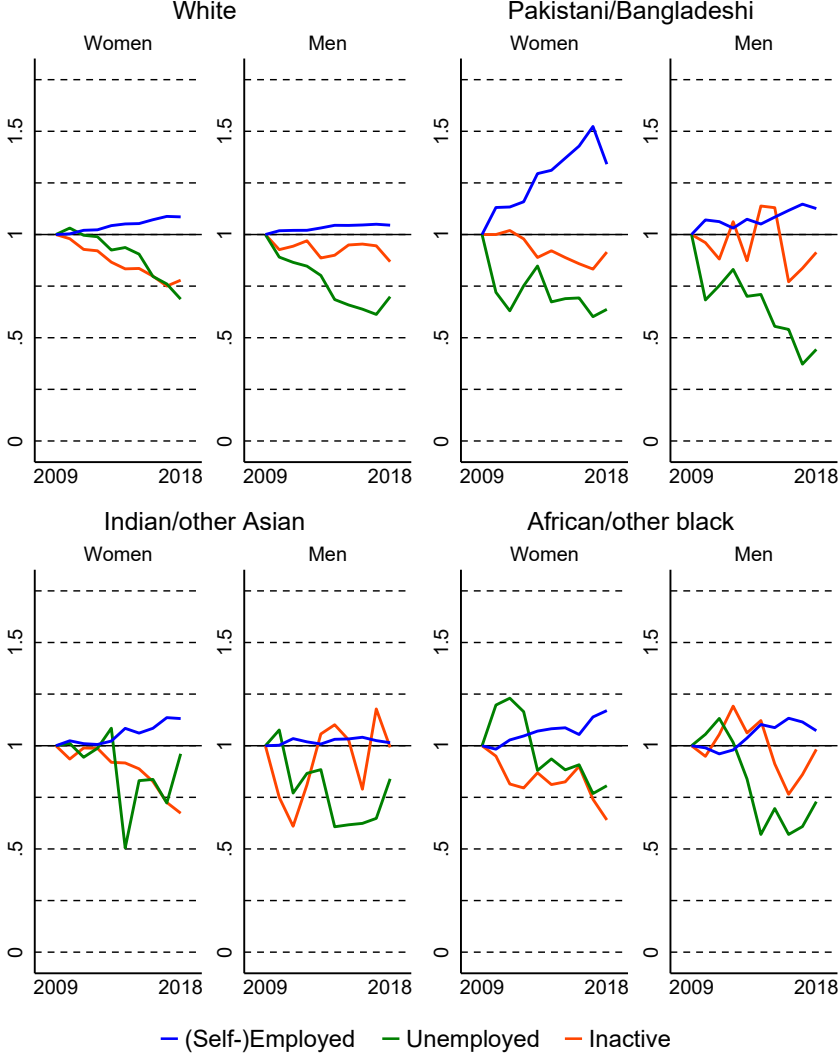
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Appendix 2

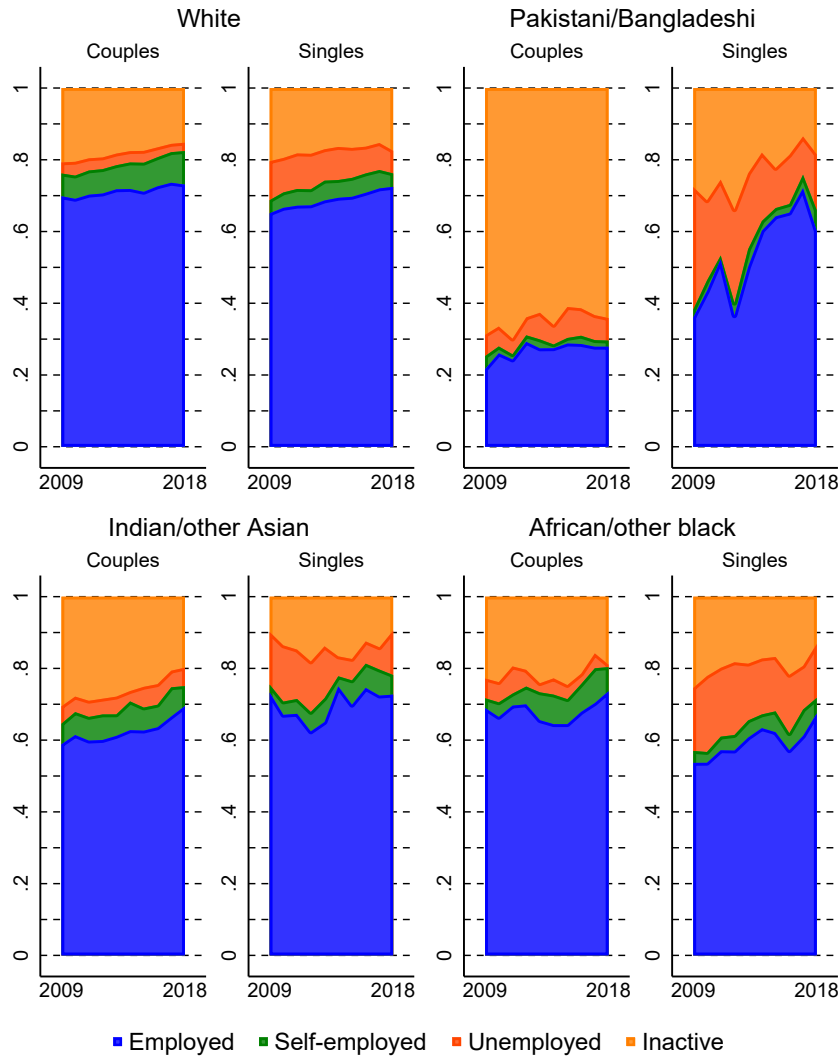
Figure A2.1: Relative change in economic status by ethnic group, gender and year (2009 = 1)



Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Individuals aged 20-55 not in retirement/full-time education. Categories "Self-employed" and "Employed" aggregated to "(Self-)Employed"

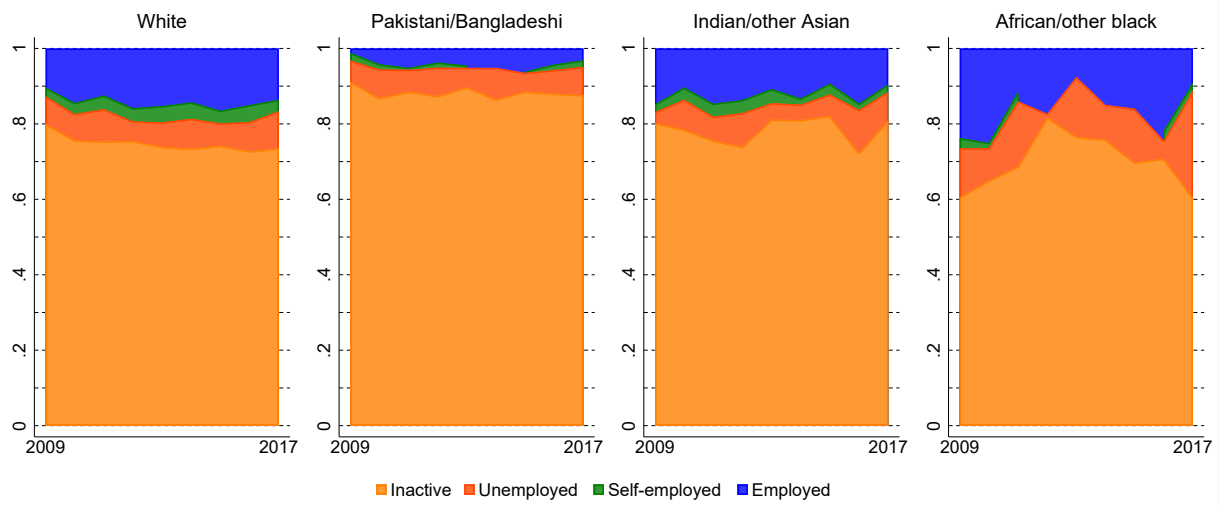
Figure A2.2: Women's economic status: singles vs. couples by ethnic group and year



Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Women aged 20-55 not in retirement/full-time education.

Figure A2.3: Labour market transitions of inactive women by ethnic group and year



Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.1: Non-weighted average marginal effects for transitions from inactivity by ethnic groups

	(1)	(2)	(3)	(4)
	White	PABA	INothA	AFothB
Age	-0.01***	-0.00*	-0.01***	0.00
Education (Ref.=None)				
- Higher education	0.08**	0.08***	0.05	0.11
- A level	0.05	0.08**	0.05	0.04
- GCSE	-0.01	0.04*	-0.04	0.06
- Other	0.01	0.05	-0.05	0.06
Fair/poor health	-0.05**	-0.02	0.03	-0.14*
Work experience	0.05	0.04**	0.14***	-0.01
Married/with partner	-0.11***	-0.16**	-0.32***	-0.16*
1st generation	0.03	0.02	0.00	-0.08
Number of adults	0.02	0.01*	-0.02	0.02
Number of children	-0.04***	-0.01	-0.05**	-0.07**
Young children (Ref.=No)				
- Decreased	-0.10***	-0.03	-0.05	0.02
- Remained stable	-0.14***	-0.04	-0.12**	-0.03
- Increased	-0.26***	-0.08***	-0.24***	-0.14
HH. income	-0.04**	-0.01	-0.01	0.19***
Mortgage	0.11***	-0.00	-0.01	0.03
Rent	0.05*	0.03	-0.05	0.06
Dissatisfying income situation	0.01	-0.00	0.02	-0.01
20+ percent shock	0.07***	0.00	0.10**	-0.11
Religion makes difference	0.00	0.07**	0.01	0.05
Mother works, child suffers	-0.06***	-0.03	-0.02	-0.02
Care responsibilities	-0.06***	-0.02	-0.06	-0.14*
Year	0.01***	0.00	0.01*	0.01
N	6,235	2,096	1,027	421

Source: Own calculations based on UKHLS wave 1-9.

Note: Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.2: Average marginal effects for transitions from inactivity by aggregated ethnic groups

	(1)	(2)	(3)	(4)
	Total	White	Asian	African
Age	-0.01***	-0.01***	-0.00*	0.00
Education (Ref.=None)				
- Higher education	0.09***	0.07*	0.10*	0.25*
- A level	0.10***	0.08*	0.10*	0.08
- GCSE	-0.00	-0.03	0.06	0.14
- Other	0.01	-0.02	0.07	0.12
Fair/poor health	-0.05***	-0.06**	-0.01	-0.17*
Work experience	0.07**	0.05	0.10***	-0.06
Married/with partner	-0.13***	-0.12***	-0.23*	-0.18
1st generation	0.01	0.03	0.01	-0.12
Number of adults	0.01	0.02	-0.01	0.01
Number of children	-0.05***	-0.05***	-0.04*	-0.11***
Number of young children (Ref.=No)				
- Decreased	-0.11***	-0.12***	-0.06	0.07
- Remained stable	-0.13***	-0.15***	-0.09*	0.01
- Increased	-0.27***	-0.29***	-0.18***	-0.19
HH. income	-0.03*	-0.04**	-0.00	0.18*
Mortgage	0.08***	0.10***	0.00	0.01
Rent	0.06**	0.06**	-0.00	0.07
Dissatisfying income situation	0.01	0.01	0.04	-0.03
20+ percent shock	0.06***	0.07***	0.03	-0.05
Religion makes difference	0.01	0.01	0.00	0.12
Mother works, child suffers	-0.05**	-0.05**	-0.01	-0.04
Care responsibilities	-0.05***	-0.06***	-0.01	-0.11
Year	0.01***	0.01***	0.01	0.01
Ethnicity (Ref.=White)				
- Asian	-0.12***			
- African	0.08			
N	7,219	4,624	2,279	316

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.3: Average marginal effects for transitions from inactivity by disaggregated ethnic groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total	WB	WO	IN	PABA	CHothA	AF	CBothB
Age	-0.01***	-0.01***	-0.01	-0.00	-0.00	-0.01	0.00	-0.00
Education (Ref.=None)								
- Higher education	0.09***	0.08*	0.08	0.01	0.07	0.16	0.13	0.00
- A level	0.10***	0.08*	0.20	-0.03	0.10	0.12	0.01	0.00
- GCSE	-0.00	-0.02	0.04	-0.05	0.07	0.04	0.12	0.00
- Other	0.01	-0.02	0.08	-0.08	0.09	-0.01	0.05	0.00
Fair/poor health	-0.05***	-0.06**	-0.01	-0.07	-0.02	0.32*	-0.22**	0.03
Work experience	0.06*	0.03	0.17*	0.20***	0.04	0.19**	-0.10	0.32*
Married/with partner	-0.13***	-0.11***	-0.35**	-0.22	-0.17	-0.53	-0.25	-0.27
1st generation	-0.02	-0.06	0.20**	-0.04	0.02	-0.09	-0.29	0.05
Number of adults	0.01	0.02	0.02	-0.01	0.00	-0.15	0.02	0.10
Number of children	-0.05***	-0.05***	-0.02	-0.04	-0.03	-0.11	-0.10***	-0.15*
Number of young children (Ref.=No)								
- Decreased	-0.11***	-0.12***	-0.16	-0.01	-0.02	-0.14	0.10	0.02
- Remained stable	-0.13***	-0.15***	-0.12	-0.12	-0.01	-0.17	-0.00	0.11
- Increased	-0.27***	-0.29***	-0.34***	-0.26**	-0.07	0.00	-0.16	0.02
HH. income	-0.03*	-0.04**	-0.05	-0.03	-0.01	-0.02	0.12	0.37*
Mortgage	0.08***	0.09***	0.24*	-0.05	-0.01	0.27*	0.02	-0.14
Rent	0.06**	0.06**	0.14	-0.07	0.02	0.20	0.07	0.21
Dissatisfying income situation	0.01	0.01	-0.01	0.03	0.04	0.10	-0.01	-0.05
20+ percent shock	0.06***	0.08***	0.01	0.05	-0.01	0.12	-0.04	-0.10
Religion makes difference	0.01	0.01	0.00	-0.06	0.09*	0.06	0.10	-0.00
Mother works, child suffers	-0.05**	-0.04*	-0.20**	-0.06	-0.01	0.01	-0.10	0.23
Care responsibilities	-0.05***	-0.06**	-0.04	-0.04	0.00	0.02	-0.14	-0.14
Year	0.01***	0.01***	-0.01	0.01	0.01	0.01	0.02	0.03
Ethnicity (Ref.=White British)								
- White other	0.05							
- Indian	-0.05							
- Pakistani/Bangladeshi	-0.14***							
- Chinese/other Asian	-0.08							
- African	0.09							
- Caribbean/other black	0.11							
N	7,219	4,270	354	466	1,537	263	200	113

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.4: Sensitivity of income shock measures - random-effects for white women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Age × Age	Cont.	Abs.	20+	30+	40+	50+	Change	20+ alt.	20+ ind.	No. empl.
Education (Ref.=None)	0.11*	0.12**	0.11*	0.11*	0.11*	0.11*	0.11*	0.11**	0.12**	0.11*
- Higher education	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00**
- A level	0.36	0.33	0.36	0.35	0.35	0.36	0.35	0.35	0.35	0.34
- GCSE	0.42**	0.40*	0.43*	0.42*	0.42*	0.42*	0.42*	0.42*	0.42*	0.40*
- Other	-0.18	-0.19	-0.17	-0.18	-0.18	-0.17	-0.18	-0.18	-0.18	-0.18
Fair/poor health	-0.13	-0.15	-0.12	-0.14	-0.13	-0.12	-0.13	-0.12	-0.12	-0.14
Work experience	-0.33**	-0.28**	-0.33**	-0.34**	-0.34**	-0.33**	-0.33**	-0.31**	-0.31**	-0.29**
Married/with partner	0.28	0.25	0.28	0.28	0.27	0.27	0.28	0.26	0.26	0.24
1st generation	-0.62***	-0.58***	-0.62***	-0.61***	-0.61***	-0.61***	-0.62***	-0.61***	-0.60***	-0.59***
Number of adults	0.15	0.15	0.14	0.14	0.15	0.16	0.14	0.15	0.15	0.17
Number of children	0.10	0.10	0.10	0.11	0.11	0.11	0.09	0.11	0.09	0.10
Young children (Ref.=No)	-0.29***	-0.27***	-0.28***	-0.29***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.27***
- Decreased	-0.63***	-0.63***	-0.64***	-0.64***	-0.63***	-0.63***	-0.64***	-0.63***	-0.63***	-0.63***
- Remained stable	-0.79***	-0.77***	-0.79***	-0.79***	-0.79***	-0.79***	-0.79***	-0.77***	-0.77***	-0.77***
- Increased	-2.24***	-1.96***	-2.24***	-2.25***	-2.25***	-2.25***	-2.25***	-2.22***	-2.23***	-1.98***
HH, income	-0.18	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.19	-0.19	-0.19
HH, income × HH, income	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
Mortgage	0.53***	0.50***	0.54***	0.55***	0.54***	0.54***	0.53***	0.52***	0.52***	0.51***
Rent	0.33**	0.34**	0.33**	0.34**	0.34**	0.34**	0.33**	0.34**	0.35**	0.33**
Dissatisfying income situation	0.04	0.04	0.03	0.03	0.04	0.04	0.03	0.03	0.02	0.04
Cont. income shock	0.01									
Cont. income shock × Cont. income shock	-0.00									
Income shock (absolute)	-0.00									
Income shock (absolute) × Income shock (absolute)	-0.00									
20+ percent shock	0.37***									
30+ percent shock										
40+ percent shock				0.50***		0.37**				
50+ percent shock										0.35**
Income change (Ref.=Stable)							0.14			
- Increase (20+ percent)							0.41***			
- Decrease (20+ percent)								0.22*		
20+ percent shock (losses only)										
Individual with 20+ shock									0.26**	
Decrease in empl. hh members										
Religion makes difference	0.06	0.09	0.07	0.07	0.07	0.07	0.07	0.05	0.05	0.34*
Mother works, child suffers	-0.29**	-0.29**	-0.29**	-0.29**	-0.29**	-0.29**	-0.29**	-0.28**	-0.29**	0.08
Care responsibilities	-0.32**	-0.34***	-0.32**	-0.33***	-0.32**	-0.32**	-0.32**	-0.34***	-0.34***	-0.29**
Year	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.07***
Constant	-155.27***	-153.63***	-155.58***	-156.09***	-152.83***	-151.60***	-155.95***	-151.99***	-152.35***	-142.50***
Insig2u	0.35*	0.35*	0.35*	0.34*	0.34*	0.34*	0.34*	0.35*	0.35*	0.34*
N	4,624	4,682	4,624	4,624	4,624	4,624	4,624	4,654	4,654	4,682
grouped N	1,741	1,750	1,741	1,741	1,741	1,741	1,741	1,747	1,747	1,750

Source: Own calculations based on UKHLS wave 1-9.
 Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.5: Sensitivity of income shock measures - random-effects for Pakistani/Bangladeshi women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Cont.	Abs.	20+	30+	40+	50+	Change	20+ alt.	20+ ind.	No. empl.
Age × Age	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.15	0.16
Education (Ref.=None)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
- Higher education	1.12	1.11	1.12	1.12	1.12	1.12	1.12	1.11	1.11	1.17
- A level	1.45	1.44	1.45	1.45	1.45	1.45	1.45	1.44	1.43	1.50*
- GCSE	1.13	1.22	1.13	1.13	1.13	1.13	1.13	1.21	1.20	1.26
- Other	1.35	1.36	1.35	1.35	1.36	1.36	1.35	1.38	1.37	1.38
Fair/poor health	-0.24	-0.27	-0.24	-0.24	-0.25	-0.24	-0.25	-0.26	-0.26	-0.31
Work experience	0.51	0.52	0.50	0.50	0.51	0.50	0.51	0.51	0.51	0.52
Married/with partner	-1.32	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.30	-1.32	-1.32
1st generation	0.29	0.29	0.30	0.30	0.30	0.30	0.30	0.27	0.27	0.31
Number of adults	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.03
Number of children	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.35
Young children (Ref.=No)										
- Decreased	-0.20	-0.24	-0.20	-0.20	-0.20	-0.20	-0.20	-0.24	-0.25	-0.26
- Remained stable	-0.15	-0.16	-0.15	-0.15	-0.15	-0.15	-0.15	-0.18	-0.18	-0.17
- Increased	-1.15	-1.15	-1.14	-1.15	-1.14	-1.15	-1.14	-1.17	-1.21	-1.20
HH. income	0.32	0.26	0.34	0.34	0.34	0.34	0.34	0.26	0.27	0.34
HH. income × HH. income	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.03
Mortgage	-0.07	-0.01	-0.08	-0.08	-0.08	-0.08	-0.08	-0.02	-0.02	-0.06
Rent	0.21	0.23	0.21	0.20	0.21	0.20	0.21	0.24	0.22	0.18
Dissatisfying income situation	0.41	0.40	0.41	0.41	0.41	0.41	0.41	0.38	0.39	0.43
Cont. income shock	-0.01									
Cont. income shock × Cont. income shock	0.00									
Income shock (absolute)	0.00									
Income shock (absolute) × Income shock (absolute)	0.00									
20+ percent shock			-0.07							
30+ percent shock				-0.03						
40+ percent shock					-0.10					
50+ percent shock						-0.04				
Income change (Ref.=Stable)										
- Increase (20+ percent)							-0.03			
- Decrease (20+ percent)							-0.08			
20+ percent shock (losses only)								-0.34		
Individual with 20+ shock									-0.15	
Decrease in empl. hh members										
Religion makes difference	1.79	1.82	1.79	1.79	1.79	1.79	1.79	1.80	1.81	0.83
Mother works, child suffers	-0.16	-0.17	-0.16	-0.16	-0.16	-0.16	-0.16	-0.17	-0.16	-0.19
Care responsibilities	0.02	0.06	0.03	0.03	0.03	0.03	0.02	0.03	0.04	0.10
Year	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07
Constant	-124.15	-140.94	-128.05	-129.27	-128.28	-129.55	-128.35	-134.15	-137.90	-139.26
Insig2u	-0.16	-0.16	-0.14	-0.14	-0.13	-0.13	-0.13	-0.17	-0.15	-0.11
N	1,537	1,566	1,537	1,537	1,537	1,537	1,537	1,551	1,551	1,566
grouped N	437	441	437	437	437	437	437	440	440	441

Source: Own calculations based on UKHLS wave 1-9.
 Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.6: Sensitivity of income shock measures - random-effects for Indian/other Asian women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Cont.	Abs.	20+	30+	40+	50+	Change	20+ alt.	20+ ind.	No. empl.
Age × Age	0.12	0.12	0.12	0.11	0.11	0.13	0.12	0.12	0.13	0.10
Education (Ref.=None)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
- Higher education	0.71	0.67	0.70	0.69	0.71	0.69	0.66	0.70	0.72	0.69
- A level	0.52	0.45	0.49	0.52	0.54	0.50	0.47	0.58	0.55	0.55
- GCSE	0.27	0.01	0.21	0.21	0.23	0.23	0.21	0.18	0.21	0.02
- Other	0.00	-0.17	-0.06	-0.04	0.00	-0.03	-0.08	-0.07	-0.05	-0.07
Fair/poor health	0.34	0.47	0.40	0.38	0.36	0.36	0.40	0.43	0.41	0.47
Work experience	1.33**	1.35**	1.32**	1.34**	1.34**	1.36**	1.32**	1.29**	1.28**	1.33**
Married/with partner	-1.24	-1.09	-1.27	-1.23	-1.24	-1.24	-1.30	-1.20	-1.16	-1.03
1st generation	-0.42	-0.58	-0.40	-0.41	-0.43	-0.43	-0.38	-0.45	-0.45	-0.54
Number of adults	-0.04	0.07	-0.08	-0.06	-0.06	-0.05	-0.09	-0.08	-0.12	0.08
Number of children	-0.31	-0.22	-0.32	-0.30	-0.30	-0.31	-0.31	-0.28	-0.29	-0.19
Young children (Ref.=No)										
- Decreased	-0.51	-0.67	-0.52	-0.56	-0.54	-0.54	-0.52	-0.60	-0.58	-0.70
- Remained stable	-0.97*	-1.04*	-0.97*	-0.99*	-0.99*	-0.99*	-0.95*	-0.94*	-0.94*	-1.05*
- Increased	-3.32*	-1.66*	-3.36*	-3.35*	-3.36*	-3.37*	-3.31*	-3.35*	-3.34*	-1.78*
HH. income	1.29	0.59	1.25	1.36	1.40	1.48	1.58	1.41	1.30	1.12
HH. income × HH. income	-0.09	-0.04	-0.09	-0.09	-0.10	-0.10	-0.10	-0.10	-0.09	-0.07
Mortgage	0.16	0.10	0.16	0.15	0.13	0.14	0.16	0.04	0.07	0.12
Rent	-0.02	0.02	-0.01	-0.01	-0.02	-0.01	-0.02	-0.06	-0.05	0.00
Dissatisfying income situation	0.32	0.38	0.30	0.32	0.32	0.32	0.30	0.28	0.28	0.39
Cont. income shock	-0.00									
Cont. income shock × Cont. income shock	0.00									
Income shock (absolute)	-0.00									
Income shock (absolute) × Income shock (absolute)	-0.00									
20+ percent shock			0.52							
30+ percent shock				0.35						
40+ percent shock					0.47					
50+ percent shock						0.70				
Income change (Ref.=Stable)							0.31			
- Increase (20+ percent)							0.61			
- Decrease (20+ percent)								0.48		
20+ percent shock (losses only)									0.51	
Individual with 20+ shock										
Decrease in empl. hh members										
Religion makes difference	0.07	-0.02	0.06	0.06	0.05	0.05	0.06	-0.06	-0.04	-0.02
Mother works, child suffers	0.07	0.14	0.08	0.09	0.08	0.07	0.06	0.06	0.07	0.14
Care responsibilities	-0.24	-0.18	-0.20	-0.23	-0.24	-0.24	-0.20	-0.19	-0.15	-0.25
Year	0.04	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.04
Constant	-85.45	-101.89	-90.80	-84.90	-88.82	-97.37	-99.94	-97.30	-96.27	-85.60
Insig2u	-0.86	-0.49	-0.81	-0.76	-0.79	-0.77	-0.83	-0.81	-0.77	-0.56
N	742	756	742	742	742	742	742	749	749	756
grouped N	248	251	248	248	248	248	248	250	250	251

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus. Source: Own calculations based on UKHLS wave 1-9.

Table A.2.7: Sensitivity of income shock measures - random-effects for African/other black women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Cont.	Abs.	20+	30+	40+	50+	Change	20+ alt.	20+ ind.	No. empl.
Age × Age	0.45	0.56	0.50	0.50	0.50	0.50	0.51	0.58	0.53	0.53
Education (Ref.=None)	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
- Higher education	1.83	1.85	1.77	1.76	1.77	1.78	1.74	1.85	1.86	1.77
- A level	0.67	0.78	0.67	0.70	0.70	0.70	0.66	0.70	0.67	0.81
- GCSE	1.24	1.20	1.12	1.10	1.11	1.11	1.15	1.11	1.17	1.18
- Other	1.02	1.03	0.93	0.96	0.97	0.97	0.92	0.96	0.94	1.03
Fair/poor health	-1.30	-1.48*	-1.32	-1.29	-1.29	-1.29	-1.34	-1.34	-1.32	-1.36
Work experience	-0.36	-0.32	-0.41	-0.44	-0.45	-0.44	-0.40	-0.46	-0.38	-0.47
Married/with partner	-1.22	-1.28	-1.22	-1.23	-1.23	-1.23	-1.26	-1.22	-1.20	-1.28
1st generation	-0.75	-0.99	-0.84	-0.80	-0.80	-0.80	-0.83	-0.84	-0.89	-0.74
Number of adults	0.06	0.10	0.09	0.07	0.07	0.07	0.07	0.14	0.20	0.02
Number of children	-0.79**	-0.84**	-0.79**	-0.79**	-0.80**	-0.80**	-0.79**	-0.81**	-0.80**	-0.82**
Young children (Ref.=No)										
- Decreased	0.43	0.55	0.46	0.46	0.46	0.46	0.48	0.45	0.40	0.49
- Remained stable	0.17	0.12	0.09	0.11	0.11	0.11	0.11	0.10	0.04	0.04
- Increased	-1.57	-1.62	-1.62	-1.57	-1.58	-1.58	-1.63	-1.66	-1.72	-1.53
HH. income	-0.57	-0.56	-0.59	-0.56	-0.56	-0.56	-0.62	-0.57	-0.57	-0.53
HH. income × HH. income	0.12	0.13	0.12	0.12	0.12	0.12	0.13	0.13	0.13*	0.12
Mortgage	0.12	0.12	0.10	0.10	0.10	0.10	0.06	0.10	0.12	0.15
Rent	0.55	0.62	0.55	0.50	0.50	0.51	0.54	0.60	0.64	0.50
Dissatisfying income situation	-0.11	-0.12	-0.18	-0.19	-0.19	-0.20	-0.20	-0.12	-0.12	-0.11
Cont. income shock	0.02									
Cont. income shock × Cont. income shock	-0.00									
Income shock (absolute)	0.00									
Income shock (absolute) × Income shock (absolute)	0.00									
20+ percent shock			-0.39							
30+ percent shock				-0.11						
40+ percent shock					-0.13					
50+ percent shock						-0.15				
Income change (Ref.=Stable)										
- Increase (20+ percent)							0.26			
- Decrease (20+ percent)							-0.30			
20+ percent shock (losses only)								-0.68		
Individual with 20+ shock										
Decrease in empl. hh members										
Religion makes difference	0.84	1.12	0.89	0.85	0.85	0.85	0.85	0.91	0.94	0.82
Mother works, child suffers	-0.28	-0.24	-0.27	-0.29	-0.28	-0.28	-0.26	-0.28	-0.25	-0.37
Care responsibilities	-0.84	-0.80	-0.86	-0.86	-0.86	-0.86	-0.82	-0.86	-0.91	-0.87
Year	0.06	0.09	0.08	0.08	0.08	0.08	0.08	0.11	0.10	0.07
Constant	-130.31	-194.80	-179.85	-169.18	-168.01	-168.11	-175.55	-234.82	-218.17	-152.25
Insig2u	-0.34	0.06	-0.20	-0.30	-0.30	-0.30	-0.28	-0.07	-0.06	-0.15
N	316	319	316	316	316	316	316	318	318	319
grouped N	148	149	148	148	148	148	148	149	149	149

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.
Source: Own calculations based on UKHLS wave 1-9.

Table A2.8: Sensitivity of the transition definition - random-effects for white women

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	2 years	3 years	Empl.	Family care	Paid job
Age	0.11*	0.31***	0.38***	0.23***	0.18***	0.07
Age × Age	-0.00***	-0.00***	-0.01***	-0.00***	-0.00***	-0.00**
Education (Ref.=None)						
- Higher education	0.36	0.47	0.61	1.44***	0.25	2.53***
- A level	0.43*	0.71*	1.07*	1.49***	0.35	1.87***
- GCSE	-0.17	-0.26	-0.45	0.66*	-0.23	1.28***
- Other	-0.12	-0.02	0.41	0.63*	-0.18	1.11***
Fair/poor health	-0.33**	-0.45**	-0.36*	-0.63***	-0.30**	-1.22***
Work experience	0.28	-0.15	-0.66	1.02***	0.47*	0.94***
Married/with partner	-0.62***	-0.62**	-0.50	-0.57**	-0.43**	0.09
1st generation	0.14	0.00	-0.15	0.25	0.08	0.26
Number of adults	0.10	0.09	0.10	0.16	0.07	0.05
Number of children	-0.28***	-0.36***	-0.43***	-0.28***	-0.28***	-0.26***
Young children (Ref.=No)						
- Decreased	-0.64***	-0.59**	-0.59**	-0.86***	-0.46**	-1.01***
- Remained stable	-0.79***	-1.00***	-1.02***	-1.17***	-0.57***	-1.03***
- Increased	-2.24***	-2.16***	-2.42***	-2.89***	-1.95***	-2.25***
HH. income	-0.18	-0.22	-0.42	-0.32	-0.19	-0.06
HH. income × HH. income	-0.00	-0.00	0.02	0.02	-0.01	-0.01
Mortgage	0.53***	0.65***	0.97***	1.02***	0.49***	0.99***
Rent	0.33**	0.44**	0.55**	0.48**	0.39**	0.35**
Dissatisfying income situation	0.03	0.06	0.11	-0.04	0.01	-0.10
20+ percent shock	0.37***	0.33**	0.23	0.51***	0.39***	0.25**
Religion makes difference	0.07	0.30	0.59**	-0.02	0.13	-0.07
Mother works, child suffers	-0.29**	-0.39**	-0.47*	-0.42***	-0.27**	-0.33***
Care responsibilities	-0.32**	-0.49***	-0.32	-0.52***	-0.27**	-0.29**
Year	0.08***	0.16***	0.13***	0.13***	0.08***	0.11***
Constant	-155.58***	-316.52***	-268.91***	-257.53***	-153.85***	-223.10***
Insig2u	0.35*	2.02***	2.89***	0.93***	0.28	0.98***
N	4,624	4,624	4,624	4,326	4,380	8,237
grouped N	1,741	1,741	1,741	1,645	1,646	3,179

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.9: Sensitivity of the transition definition - random-effects for Pakistani/Bangladeshi women

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	2 years	3 years	Empl.	Family care	Paid job
Age	0.17	0.23	0.11	0.08	0.17	-0.06
Age × Age	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Education (Ref.=None)						
- Higher education	1.12	2.20	2.67	1.63	1.07	0.90
- A level	1.45	2.87*	3.78*	1.53	1.44	0.54
- GCSE	1.13	2.43	3.58*	0.94	1.12	0.25
- Other	1.35	2.54	3.43	1.42	1.26	-0.48
Fair/poor health	-0.24	-0.15	-0.34	-0.40	-0.23	-0.74
Work experience	0.50	0.97	1.53	1.03	0.59	1.29**
Married/with partner	-1.34	-1.23	-1.11	-0.59	-1.14	-1.30*
1st generation	0.30	0.33	0.39	0.30	0.29	0.35
Number of adults	0.02	0.01	0.03	0.08	0.02	0.04
Number of children	-0.34	-0.46	-0.31	-0.19	-0.35	0.05
Young children (Ref.=No)						
- Decreased	-0.20	-0.18	-0.15	-0.07	-0.23	-0.77
- Remained stable	-0.15	0.41	1.15	-0.35	-0.20	-0.61
- Increased	-1.14	-1.48	-1.16	-1.57	-1.13	-0.81
HH. income	0.34	0.59	-0.29	-0.09	-1.63	-0.29
HH. income × HH. income	-0.03	-0.05	0.03	-0.00	0.10	0.04
Mortgage	-0.08	-0.78	-1.01	1.35	-0.09	0.62
Rent	0.21	-0.34	-0.48	1.25	0.11	0.75
Dissatisfying income situation	0.41	0.58	0.55	0.32	0.36	0.47
20+ percent shock	-0.07	0.28	0.33	0.11	-0.08	-0.33
Religion makes difference	1.79	0.59	0.06	0.85	1.77	0.36
Mother works, child suffers	-0.16	0.17	0.43	-0.18	-0.11	-0.44
Care responsibilities	0.03	0.19	-0.34	-0.22	-0.00	-0.21
Year	0.06	0.12	0.03	0.03	0.05	0.00
Constant	-128.05	-245.81	-60.41	-63.11	-99.05	-9.75
lnsig2u	-0.14	2.19***	3.33***	-0.24	-0.26	-10.85
N	1,537	1,537	1,537	1,450	1,517	1,932
grouped N	437	437	437	420	431	569

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.10: Sensitivity of the transition definition - random-effects for Indian/other Asian women

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	2 years	3 years	Empl.	Family care	Paid job
Age	0.12	0.30	0.27	0.18	0.12	-0.05
Age × Age	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
Education (Ref.=None)						
- Higher education	0.70	1.16	1.84	1.73	0.65	1.79**
- A level	0.49	0.45	0.58	1.18	0.47	1.85*
- GCSE	0.21	0.00	-0.12	0.82	0.23	1.12
- Other	-0.06	0.29	1.01	0.01	-0.08	0.87
Fair/poor health	0.40	0.17	0.02	0.83	0.41	-0.27
Work experience	1.32**	2.17**	3.33**	2.32**	1.28**	1.27**
Married/with partner	-1.27	-3.32*	-3.36*	-1.05	-1.05	0.67
1st generation	-0.40	-0.95	-1.09	-0.86	-0.35	-0.43
Number of adults	-0.08	-0.36	-0.48	-0.00	-0.09	0.18
Number of children	-0.32	-0.53	-0.36	-0.54	-0.30	-0.59**
Young children (Ref.=No)						
- Decreased	-0.52	-0.68	-0.47	-0.87	-0.54	0.02
- Remained stable	-0.97*	-0.89	-0.75	-1.83**	-0.92*	-0.72
- Increased	-3.36*	-3.00*	-2.95*	-4.01*	-3.27*	-0.54
HH. income	1.25	-1.03	-1.56	1.41	1.48	0.66
HH. income × HH. income	-0.09	0.07	0.11	-0.12	-0.11	-0.09
Mortgage	0.16	-0.16	-2.04	0.34	0.16	0.77
Rent	-0.01	-0.18	-1.65	-0.00	-0.01	-0.11
Dissatisfying income situation	0.30	0.52	1.11	0.64	0.33	0.16
20+ percent shock	0.52	1.06*	0.74	0.86	0.55	0.26
Religion makes difference	0.06	0.26	0.12	-0.08	0.02	0.08
Mother works, child suffers	0.08	0.28	0.31	0.45	0.10	-0.48
Care responsibilities	-0.20	0.10	0.32	-1.29	-0.16	-0.02
Year	0.04	0.15	0.09	0.09	0.04	0.05
Constant	-90.80	-296.14	-183.69	-182.13	-84.29	-94.58
Insig2u	-0.81	1.60***	2.85***	0.62	-0.91	0.67
N	742	742	742	694	729	1,097
grouped N	248	248	248	243	243	399

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.11: Sensitivity of the transition definition - random-effects for African/other black women

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	2 years	3 years	Empl.	Family care	Paid job
Age	0.50	0.60	1.17	0.35	0.57	-0.02
Age × Age	-0.01	-0.01	-0.01	-0.00	-0.01	0.00
Education (Ref.=None)						
- Higher education	1.77	2.97*	4.65	2.51	1.54	1.93**
- A level	0.67	0.83	0.13	1.03	-0.15	0.94
- GCSE	1.12	1.37	1.65	0.71	1.10	0.48
- Other	0.93	0.93	1.18	1.76	0.79	0.48
Fair/poor health	-1.32	-1.27	-3.21*	-1.59	-0.96	-1.59***
Work experience	-0.41	-0.92	-2.29	-0.16	-0.56	0.56
Married/with partner	-1.22	-1.53	-3.38*	0.26	-0.83	-0.01
1st generation	-0.84	-0.87	-1.43	-0.82	-0.99	-0.06
Number of adults	0.09	0.10	0.88	0.17	0.00	-0.09
Number of children	-0.79**	-0.77*	-1.06*	-0.80*	-0.70**	-0.13
Young children (Ref.=No)						
- Decreased	0.46	-0.21	-1.70	0.15	0.72	-0.68
- Remained stable	0.09	0.49	0.62	0.39	0.65	-0.46
- Increased	-1.62	-0.83	-0.99	-2.24	-0.87	-1.47
HH. income	-0.59	-0.39	-75.15	-0.63	-0.80	-0.24
HH. income × HH. income	0.12	0.05	5.13	0.13	0.14	0.02
Mortgage	0.10	0.88	0.95	0.46	0.07	0.18
Rent	0.55	0.02	0.20	0.67	0.45	-0.18
Dissatisfying income situation	-0.18	-0.33	-0.01	-0.29	-0.02	-0.25
20+ percent shock	-0.39	-0.40	-0.68	-0.69	-0.36	-0.17
Religion makes difference	0.89	1.13	0.84	1.51	1.02	0.66
Mother works, child suffers	-0.27	-0.26	-0.14	-0.53	-0.03	-0.23
Care responsibilities	-0.86	-0.66	-0.65	-1.28	-0.74	-0.28
Year	0.08	0.18	0.23	0.16	0.10	0.10
Constant	-179.85	-369.55	-208.66	-324.13	-216.82	-205.58
Insig2u	-0.20	1.23	2.59**	0.59	-0.83	0.05
N	316	316	316	267	292	799
grouped N	148	148	148	126	132	337

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.12: Interaction of income shock with other characteristics - random-effects for white women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Base	Work exp.	Education	Partner	No. children	Young child	Age	Health	Care	Gender norm	Religion
Age × Age	0.11*	0.11*	0.11*	0.11*	0.11*	0.11*	0.09	0.11*	0.11*	0.11*	0.11*
Education (Ref.=None)	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00**	-0.00***	-0.00***	-0.00***	-0.00***
- Higher education	0.36	0.36	0.44*	0.37*	0.36	0.36	0.36*	0.36	0.36	0.37*	0.36
- A level	0.43*	0.43*	0.52*	0.43*	0.43*	0.43*	0.43*	0.43*	0.43*	0.43*	0.43*
- GCSE	-0.17	-0.17	-0.02	-0.17	-0.17	-0.18	-0.17	-0.18	-0.18	-0.17	-0.17
- Other	-0.12	-0.12	0.11	-0.12	-0.12	-0.13	-0.12	-0.13	-0.13	-0.12	-0.12
Fair/poor health	-0.33**	-0.33**	-0.32**	-0.33**	-0.33**	-0.33**	-0.33**	-0.37**	-0.33**	-0.33**	-0.33**
Work experience	0.28	0.41	0.29	0.28	0.28	0.29	0.28	0.28	0.28	0.28	0.28
Married/with partner	-0.62***	-0.62***	-0.63***	-0.68***	-0.62***	-0.61***	-0.63***	-0.62***	-0.62***	-0.62***	-0.62***
1st. generation	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.14	0.14	0.14
Number of adults	0.10	0.10	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Number of children	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***	-0.28***
Number of young children (Ref.=No)											
- Decreased	-0.64***	-0.64***	-0.63***	-0.63***	-0.64***	-0.74***	-0.63***	-0.64***	-0.64***	-0.64***	-0.64***
- Remained stable	-0.79***	-0.79***	-0.79***	-0.79***	-0.79***	-0.75***	-0.79***	-0.79***	-0.79***	-0.79***	-0.79***
- Increased	-2.24***	-2.24***	-2.25***	-2.24***	-2.24***	-2.26***	-2.24***	-2.25***	-2.23***	-2.25***	-2.24***
HH. income	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18
HH. income × HH. income	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Mortgage	0.53***	0.53***	0.54***	0.53***	0.53***	0.54***	0.54***	0.53***	0.54***	0.53***	0.53***
Rent	0.33**	0.33**	0.33**	0.33**	0.33**	0.34**	0.34**	0.33**	0.34**	0.33**	0.33**
Dissatisfying income situation	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03
Care responsibilities	-0.32**	-0.32**	-0.32**	-0.32**	-0.32**	-0.32**	-0.32**	-0.32**	-0.40***	-0.32**	-0.32**
Child suffers	-0.29**	-0.29**	-0.30**	-0.29**	-0.29**	-0.30**	-0.29**	-0.29**	-0.29**	-0.24*	-0.29**
Religion makes difference	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.07
Religion makes difference	0.37***	0.88*	0.93**	0.11	0.40*	0.38**	-1.93	0.33**	0.25*	0.47***	0.37***
20+ percent shock	-0.55										
20+ percent shock × Work experience		-0.55									
20+ percent shock × - Higher education		-0.34									
20+ percent shock × - A level		-0.48									
20+ percent shock × - GCSE		-0.77*									
20+ percent shock × - Other		-1.21**									
20+ percent shock × Married/with partner				0.29							
20+ percent shock × Number of children					-0.02						
20+ percent shock × - Decreased						0.52					
20+ percent shock × - Remained stable						-0.26					
20+ percent shock × - Increased						0.07					
20+ percent shock × Age							0.11				
20+ percent shock × Age × Age							-0.00				
20+ percent shock × Fair/poor health								0.16			
20+ percent shock × Care responsibilities									0.37		
20+ percent shock × Child suffers											
20+ percent shock × Religion makes difference											
Year	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***
Constant	-155.58***	-155.29***	-157.95***	-155.53***	-155.69***	-156.59***	-154.59***	-155.29***	-153.28***	-156.14***	-155.59***
Insig2a	0.35*	0.34*	0.35*	0.35*	0.35*	0.36*	0.34*	0.35*	0.33*	0.35*	0.35*
Friends: with job											
Financial difficulties											
N	4,624	4,624	4,624	4,624	4,624	4,624	4,624	4,624	4,624	4,624	4,624
grouped N	1,741	1,741	1,741	1,741	1,741	1,741	1,741	1,741	1,741	1,741	1,741

Source: Own calculations based on UKHLS wave 1-9.
 Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.13: Interaction of income shock with other characteristics - random-effects for Pakistani/Bangladeshi women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Base	Work exp.	Education	Partner	No. children	Young child	Age	Health	Care	Gender norm	Religion
Age × Age	0.17	0.16	0.17	0.17	0.19	0.18	0.22	0.17	0.18	0.17	0.17
Education (Ref.=None)											
- Higher education	1.12	1.11	0.96	1.12	1.11	1.12	1.12	1.12	1.13	1.12	1.11
- A level	1.45	1.44	1.31	1.46	1.45*	1.46	1.47*	1.46	1.44	1.44	1.45
- GCSE	1.13	1.13	1.05	1.14	1.12	1.12	1.11	1.13	1.13	1.13	1.13
- Other	1.35	1.35	1.14	1.37	1.33	1.36	1.36	1.36	1.34	1.35	1.35
Fair/poor health	-0.24	-0.24	-0.24	-0.24	-0.26	-0.25	-0.26	-0.27	-0.23	-0.23	-0.24
Work experience	0.50	0.43	0.49	0.51	0.48	0.50	0.50	0.51	0.50	0.49	0.51
Married/with partner	-1.34	-1.34	-1.30	-1.46	-1.30	-1.32	-1.32	-1.34	-1.37	-1.33	-1.34
1st generation	0.30	0.30	0.29	0.30	0.28	0.30	0.30	0.30	0.28	0.29	0.30
Number of adults	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Number of young children (Ref.=No)	-0.34	-0.34	-0.34	-0.34	-0.42	-0.35	-0.35	-0.35	-0.35	-0.34	-0.34
- Decreased	-0.20	-0.20	-0.19	-0.19	-0.20	-0.38	-0.19	-0.20	-0.20	-0.21	-0.20
- Remained stable	-0.15	-0.16	-0.15	-0.15	-0.13	-0.27	-0.14	-0.14	-0.13	-0.16	-0.15
- Increased	-1.14	-1.15	-1.19	-1.10	-1.07	-1.19	-1.18	-1.15	-1.10	-1.15	-1.14
HH. income	0.34	0.32	0.33	0.33	0.36	0.34	0.36	0.34	0.34	0.34	0.34
HH. income × HH. income	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Mortgage	-0.08	-0.07	-0.09	-0.08	-0.07	-0.07	-0.07	-0.08	-0.08	-0.07	-0.08
Rent	0.21	0.22	0.20	0.21	0.22	0.21	0.21	0.20	0.20	0.21	0.21
Dissatisfying income situation	0.41	0.41	0.41	0.41	0.40	0.43	0.43	0.41	0.41	0.41	0.41
Care responsibilities	0.03	0.02	0.03	0.04	0.04	0.03	0.04	0.02	0.14	0.04	0.03
Child suffers	-0.16	-0.16	-0.16	-0.16	-0.17	-0.18	-0.18	-0.15	-0.17	-0.24	-0.16
Religion makes difference	1.79	1.78	1.78	1.80	1.79	1.77	1.80	1.79	1.75	1.79	1.95
20+ percent shock	-0.07	-0.36	-1.01	-1.11	-0.71	-0.50	4.62	-0.11	0.08	-0.43	0.48
20+ percent shock × Work experience		0.41									
20+ percent shock × - Higher education			1.12								
20+ percent shock × - A level			1.02								
20+ percent shock × - GCSE			0.76								
20+ percent shock × - Other			1.41								
20+ percent shock × Married/with partner				1.07							
20+ percent shock × Number of children					0.30						
20+ percent shock × - Decreased						0.87					
20+ percent shock × - Remained stable						0.69					
20+ percent shock × - Increased						0.36					
20+ percent shock × Age							-0.22				
20+ percent shock × Age × Age							0.00				
20+ percent shock × Fair/poor health								0.16			
20+ percent shock × Care responsibilities									-0.65		
20+ percent shock × Child suffers											
20+ percent shock × Religion makes difference											
Year	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Constant	-128.05	-126.37	-127.22	-128.21	-129.27	-132.65	-133.21	-129.18	-128.97	-122.70	-127.96
Insig2u	-0.14	-0.16	-0.18	-0.13	-0.21	-0.15	-0.15	-0.12	-0.19	-0.17	-0.14
Friends: with job											
Financial difficulties											
N	1,537	1,537	1,537	1,537	1,537	1,537	1,537	1,537	1,537	1,537	1,537
grouped N	437	437	437	437	437	437	437	437	437	437	437

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.14: Interaction of income shock with other characteristics - random-effects for Indian/other Asian women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Base	Work exp.	Education	Partner	No. children	Young child	Age	Health	Care	Gender norm	Religion
Age × Age	0.12	0.12	0.14	0.13	0.12	0.12	0.16	0.13	0.12	0.11	0.13
Education (Ref.=None)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
- Higher education	0.70	0.69	0.40	0.78	0.70	0.77	0.68	0.68	0.68	0.69	0.72
- A level	0.49	0.49	0.25	0.64	0.50	0.52	0.47	0.45	0.53	0.49	0.48
- GCSE	0.21	0.21	0.12	0.24	0.22	0.21	0.21	0.23	0.22	0.21	0.23
- Other	-0.06	-0.05	0.17	-0.01	-0.06	0.01	-0.06	-0.05	-0.08	-0.07	-0.02
Fair/poor health	0.40	0.40	0.37	0.52	0.40	0.38	0.39	0.15	0.43	0.41	0.37
Work experience	1.32**	1.53**	1.37**	1.44**	1.33**	1.31**	1.31**	1.31**	1.33**	1.33**	1.31**
Married/with partner	-1.27	-1.34	-1.27	-1.98*	-1.26	-1.29	-1.29	-1.29	-1.35	-1.27	-1.30
1st. generation	-0.40	-0.43	-0.40	-0.54	-0.41	-0.41	-0.41	-0.41	-0.47	-0.40	-0.40
Number of adults	-0.08	-0.09	-0.07	-0.12	-0.08	-0.10	-0.08	-0.06	-0.08	-0.08	-0.06
Number of children	-0.32	-0.34	-0.32	-0.33	-0.34	-0.32	-0.32	-0.33	-0.32	-0.32	-0.32
Number of young children (Ref.=No)											
- Decreased	-0.52	-0.52	-0.52	-0.53	-0.53	-0.66	-0.52	-0.46	-0.49	-0.52	-0.50
- Remained stable	-0.97*	-0.96*	-1.00*	-0.99*	-0.97*	-1.22*	-0.97*	-0.96*	-0.91*	-0.97*	-0.96*
- Increased	-3.36*	-3.36*	-3.43*	-3.50*	-3.36*	-3.08*	-3.36*	-3.38*	-3.33*	-3.36*	-3.31*
HH. income	1.25	1.12	1.63	1.43	1.26	1.20	1.25	1.19	1.28	1.24	1.67
HH. income × HH. income	-0.09	-0.08	-0.11	-0.10	-0.09	-0.08	-0.09	-0.08	-0.09	-0.09	-0.12
Mortgage	0.16	0.16	0.24	0.10	0.17	0.20	0.15	0.15	0.13	0.16	0.19
Rent	-0.01	0.00	0.04	-0.11	-0.00	0.00	-0.03	-0.02	-0.08	-0.02	-0.00
Dissatisfying income situation	0.30	0.29	0.32	0.24	0.30	0.33	0.31	0.30	0.30	0.31	0.32
Care responsibilities	-0.20	-0.21	-0.20	-0.12	-0.20	-0.21	-0.22	-0.22	0.16	-0.20	-0.20
Child suffers	0.08	0.06	0.07	0.08	0.08	0.08	0.08	0.08	0.09	0.05	0.08
Religion makes difference	0.06	0.05	0.08	0.11	0.06	0.08	0.07	0.08	0.06	0.06	0.20
20+ percent shock	0.52	1.20	-0.28	0.68	0.39	0.20	3.90	0.33	0.73*	0.44	1.00
20+ percent shock × Work experience		-0.81									
20+ percent shock × - Higher education			1.34								
20+ percent shock × - A level			0.99								
20+ percent shock × - GCSE			0.55								
20+ percent shock × - Other			-0.60								
20+ percent shock × Married/with partner				0.00	0.08						
20+ percent shock × Number of children											
20+ percent shock × - Decreased						0.42					
20+ percent shock × - Remained stable						0.97					
20+ percent shock × - Increased						0.00					
20+ percent shock × Age							-0.18				
20+ percent shock × Age × Age							0.00				
20+ percent shock × Fair/poor health								0.90			
20+ percent shock × Care responsibilities									-2.23		
20+ percent shock × Religion makes difference										0.11	
Year	0.04	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.04	0.04	-0.64
Constant	-90.80	-97.05	-99.89	-106.75	-91.54	-96.52	-97.53	-87.66	-85.66	-91.24	-85.66
Insig2u	-0.81	-0.75	-0.75	-0.77	-0.78	-0.61	-0.81	-0.89	-1.13	-0.81	-0.81
Friends: with job											
Financial difficulties											
N	742	742	742	739	742	731	742	742	742	742	742
grouped N	248	248	248	247	248	244	248	248	248	248	248

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.
Source: Own calculations based on UKHLS wave 1-9.

Table A2.15: Interaction of income shock with other characteristics - random-effects for African/other black women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Age × Age	0.50	0.50	0.44	0.50	0.57	0.53	0.26	0.50	0.52	0.52	0.50
Education (Ref.=None)	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.00	-0.01	-0.01	-0.01	-0.01
- Higher education	1.77	1.78	1.19	1.77	1.89	1.72	1.58	1.77	1.77	1.68	1.77
- A level	0.67	0.69	0.26	0.68	0.78	0.68	0.51	0.67	0.75	0.56	0.67
- GCSE	1.12	1.12	1.24	1.13	1.41	1.09	1.23	1.12	1.14	1.12	1.13
- Other	0.93	0.94	0.63	0.94	1.11	0.90	0.76	0.93	0.94	0.93	0.93
Fair/poor health	-1.32	-1.33	-1.30	-1.31	-1.41	-1.32	-1.35	-1.32	-1.35	-1.31	-1.32
Work experience	-0.41	-0.38	-0.26	-0.42	-0.40	-0.45	-0.28	-0.41	-0.42	-0.44	-0.41
Married/with partner	-1.22	-1.22	-1.19	-1.15	-1.22	-1.25	-1.19	-1.22	-1.27	-1.27	-1.22
1st generation	-0.84	-0.85	-0.82	-0.85	-0.90	-0.78	-0.97	-0.84	-0.83	-0.77	-0.84
Number of adults	0.09	0.08	0.16	0.07	0.15	0.10	0.13	0.09	0.10	0.12	0.09
Number of children	-0.79**	-0.79**	-0.82**	-0.79**	-0.99**	-0.80**	-0.78**	-0.79**	-0.80**	-0.79**	-0.79**
Number of young children (Ref.=No)											
- Decreased	0.46	0.46	0.45	0.45	0.53	0.60	0.42	0.46	0.48	0.46	0.46
- Remained stable	0.09	0.09	-0.04	0.09	0.12	-0.05	0.08	0.15	0.08	0.15	0.09
- Increased	-1.62	-1.62	-1.71	-1.62	-1.77	-1.73	-1.64	-1.62	-1.66	-1.61	-1.62
HH. income	-0.59	-0.59	-0.56	-0.59	-0.56	-0.60	-0.56	-0.59	-0.57	-0.57	-0.59
HH. income × HH. income	0.12	0.12	0.13	0.13	0.12	0.13	0.12	0.12	0.12	0.12	0.13
Mortgage	0.10	0.12	0.11	0.10	0.03	0.15	0.04	0.10	0.09	0.10	0.10
Rent	0.55	0.55	0.59	0.56	0.52	0.59	0.49	0.55	0.53	0.57	0.55
Dissatisfying income situation	-0.18	-0.18	-0.12	-0.17	-0.18	-0.19	-0.15	-0.18	-0.18	-0.18	-0.18
Care responsibilities	-0.86	-0.85	-0.90	-0.88	-0.88	-0.82	-0.88	-0.86	-0.68	-0.83	-0.85
Child suffers	-0.27	-0.26	-0.35	-0.27	-0.27	-0.28	-0.27	-0.27	-0.30	-0.54	-0.27
Religion makes difference	0.89	0.89	1.03	0.89	0.89	0.81	1.07	0.89	0.90	0.86	0.90
20+ percent shock	-0.39	-0.20	-1.66	-0.11	-1.94	-0.62	-16.77	-0.40	-0.21	-0.87	-0.35
20+ percent shock × Work experience		-0.24									
20+ percent shock × - Higher education			2.12								
20+ percent shock × - A level			1.86								
20+ percent shock × - GCSE			-0.12								
20+ percent shock × - Other			0.98								
20+ percent shock × Married/with partner				-0.34	0.63						
20+ percent shock × Number of children											
20+ percent shock × - Decreased						-0.62					
20+ percent shock × - Remained stable						0.59					
20+ percent shock × - Increased						0.60					
20+ percent shock × Age							0.95				
20+ percent shock × Age × Age							-0.01				
20+ percent shock × Fair/poor health								0.02			
20+ percent shock × Care responsibilities									-0.75		
20+ percent shock × Child suffers											
20+ percent shock × Religion makes difference											
Year	0.08	0.09	0.03	0.09	0.06	0.08	0.05	0.08	0.08	0.08	-0.06
Constant	-179.85	-185.05	-74.42	-184.23	-134.43	-165.07	-111.75	-179.96	-170.72	-174.01	-180.06
insig2u	-0.20	-0.17	-0.23	-0.19	-0.09	-0.16	-0.36	-0.20	-0.19	-0.35	-0.20
Friends: with job											
Financial difficulties											
N	316	316	316	316	316	316	316	316	316	316	316
grouped N	148	148	148	148	148	148	148	148	148	148	148

Source: Own calculations based on UKHLS wave 1-9.
 Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.16: Sensitivity of hotdeck imputations - random-effects for white women

	(1)	(2)
	Hotdeck imputations	No hotdeck imputations
Age	0.11*	0.11*
Education (Ref.=None)		
- Higher education	0.36	0.36
- A level	0.43*	0.43*
- GCSE	-0.17	-0.17
- Other	-0.12	-0.07
Fair/poor health	-0.33**	-0.31**
Work experience	0.28	0.22
Married/with partner	-0.62***	-0.64***
1st generation	0.14	0.17
Number of adults	0.10	0.10
Number of children	-0.28***	-0.29***
Young children (Ref.=No)		
- Decreased	-0.64***	-0.65***
- Remained stable	-0.79***	-0.80***
- Increased	-2.24***	-2.28***
HH. income	-0.18	-0.18
Mortgage	0.53***	0.55***
Rent	0.33**	0.33**
Dissatisfying income situation	0.03	0.03
20+ percent shock	0.37***	0.37***
Religion makes difference	0.07	0.08
Mother works, child suffers	-0.29**	-0.32**
Care responsibilities	-0.32**	-0.33**
Year	0.08***	0.08***
Age × Age	-0.00***	-0.00**
HH. income × HH. income	-0.00	-0.00
Constant	-155.58***	-163.68***
Insig2u	0.35*	0.38**
N	4,624	4,501
grouped N	1,741	1,661

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.17: Sensitivity of hotdeck imputations - random-effects for Pakistani/Bangladeshi women

	(1)	(2)
	Hotdeck imputations	No hotdeck imputations
Age	0.17	-0.00
Education (Ref.=None)		
- Higher education	1.12	1.44
- A level	1.45	1.69*
- GCSE	1.13	1.00
- Other	1.35	1.69
Fair/poor health	-0.24	-0.32
Work experience	0.50	0.23
Married/with partner	-1.34	-1.04
1st generation	0.30	0.34
Number of adults	0.02	-0.04
Number of children	-0.34	-0.32
Young children (Ref.=No)		
- Decreased	-0.20	-0.07
- Remained stable	-0.15	-0.00
- Increased	-1.14	-2.40
HH. income	0.34	0.13
Mortgage	-0.08	-0.14
Rent	0.21	0.05
Dissatisfying income situation	0.41	0.47
20+ percent shock	-0.07	-0.19
Religion makes difference	1.79	1.87
Mother works, child suffers	-0.16	-0.10
Care responsibilities	0.03	-0.05
Year	0.06	0.04
Age × Age	-0.00	-0.00
HH. income × HH. income	-0.03	-0.00
Constant	-128.05	-85.32
Insig2u	-0.14	-0.32
N	1,537	1,185
grouped N	437	283

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.18: Sensitivity of hotdeck imputations - random-effects for Indian/other Asian women

	(1)	(2)
	Hotdeck imputations	No hotdeck imputations
Age	0.12	0.11
Education (Ref.=None)		
- Higher education	0.70	0.68
- A level	0.49	0.38
- GCSE	0.21	0.14
- Other	-0.06	-0.24
Fair/poor health	0.40	0.43
Work experience	1.32**	1.26*
Married/with partner	-1.27	-1.07
1st generation	-0.40	-0.47
Number of adults	-0.08	-0.19
Number of children	-0.32	-0.26
Young children (Ref.=No)		
- Decreased	-0.52	-0.66
- Remained stable	-0.97*	-1.18*
- Increased	-3.36*	-3.37*
HH. income	1.25	1.06
Mortgage	0.16	0.18
Rent	-0.01	-0.00
Dissatisfying income situation	0.30	0.22
20+ percent shock	0.52	0.53
Religion makes difference	0.06	0.09
Mother works, child suffers	0.08	0.34
Care responsibilities	-0.20	-0.01
Year	0.04	0.05
Age × Age	-0.00	-0.00
HH. income × HH. income	-0.09	-0.08
Constant	-90.80	-110.11
Insig2u	-0.81	-0.58
N	742	621
grouped N	248	191

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Table A2.19: Sensitivity of hotdeck imputations - random-effects for African/other black women

	(1)	(2)
	Hotdeck imputations	No hotdeck imputations
Age	0.50	0.61
Education (Ref.=None)		
- Higher education	1.77	1.91
- A level	0.67	0.84
- GCSE	1.12	1.10
- Other	0.93	1.25
Fair/poor health	-1.32	-1.48
Work experience	-0.41	-0.85
Married/with partner	-1.22	-1.35
1st generation	-0.84	-1.09
Number of adults	0.09	0.11
Number of children	-0.79**	-0.81**
Young children (Ref.=No)		
- Decreased	0.46	0.53
- Remained stable	0.09	0.14
- Increased	-1.62	-1.97
HH. income	-0.59	-0.58
Mortgage	0.10	0.34
Rent	0.55	0.64
Dissatisfying income situation	-0.18	-0.12
20+ percent shock	-0.39	-0.51
Religion makes difference	0.89	1.03
Mother works, child suffers	-0.27	-0.48
Care responsibilities	-0.86	-0.77
Year	0.08	0.08
Age × Age	-0.01	-0.01
HH. income × HH. income	0.12	0.13
Constant	-179.85	-165.95
Insig2u	-0.20	0.25
N	316	274
grouped N	148	122

Source: Own calculations based on UKHLS wave 1-9.

Note: Weighted results. Inactive women aged 20-55 living with at least one other person aged 16 plus.

Chapter 3

Outside the box? - Women's individual poverty situation in the EU and the role of labour market characteristics and tax-benefit policies¹

Co-authored with Silvia Avram and Daria Popova

¹Acknowledgements: We would like to thank Amy Clair and Renee Reichl Luthra for their continuous support and feedback. We are also grateful for comments received at ESPAnet, INEQ Research Seminar and ECINEQ. The results presented here are based on EUROMOD version H1.62. We are indebted to the many people who have contributed to the development of EUROMOD. The results and their interpretation are the authors' responsibility.

Abstract

Social policy debates as early as the 1950s have focused on the activation of individuals into employment. In the so-called adult worker model, making work pay is considered the holy grail ensuring a sustainable welfare state and the financial independence of its population. This however equates jobs with good working conditions and fair pay; ignores women's reality of part-time work, unpaid care work and the gender pay gap; and has often resulted in the weakening of traditional social protection. The aim of this contribution is to empirically study the individual situation of women under the adult worker paradigm across the EU using the tax-benefit model EUROMOD and EU-SILC data. It compares the individual poverty situation of working-age women to the benchmark situation of typical male workers, shows the heterogeneity of the difference by women's economic situation and job characteristics and analyses the role of the tax-benefit system in reducing the gap. The analysis shows that only slightly more than one third of women fit the adult worker model, while this is the case for almost two third of men. This leads to a significant gender gap in poverty in the EU. The gap is especially apparent for inactive and unemployed women but also for women in atypical employment. Fitting the stereotype of the typical male worker as closely as possible is important but even women who fit the box still show a difference to typical male workers, highlighting the role of the gender pay gap. Benefits cushion some of the gendered labour market differences but are often not generous enough for unemployed and inactive women or not sufficiently available for self-employed women. Women in atypical employment are disproportionately affected by taxes and social insurance contribution which contributes to a larger gap.

Keywords: individual poverty risk, adult worker model, gender gap, employment

3.1 Introduction

Social policy debates as early as the 1950s have focused on the activation of individuals into employment. Starting with active labour market policies focusing on workers in the male breadwinner welfare state (Annesley 2007), policies have expanded to include all individuals in the early 2000s shifting to the adult worker model (Lewis 2001). In these debates, making work pay is considered the holy grail ensuring a sustainable welfare state (Esping-Andersen et al. 2002) and the financial independence of its population. The main assumption of this strategy is that being in full-time employment for most of the working-age life guarantees a good standard of living and lower dependence on social protection.

This broad assumption has several caveats. First, it equates jobs with good working conditions and fair pay. Research, however, shows that even though employment rates have increased, poverty among the working-age population has not gone down (Cantillon et al. 2019, Fischer and Strauss 2020, Nolan 2018) and in-work poverty has increased (Halleröd et al. 2015, Lohmann and Marx 2019). Second, the gender blindness of activation (Daly 2011) ignores women's reality of part-time work, unpaid care work and the gender pay gap. Rather than acknowledging unpaid contributions to society, the activation idea encourages all working-age adults to adjust their life course to the stereotypical male breadwinner model (Saraceno 2015). Saraceno (2015) refers to this as an ambivalent empowering of women, as it is almost taken for granted that women will continue to do the unpaid care work even when in employment. Third, the focus on individual financial independence through employment has partly led to 'unsupportive' welfare reforms where welfare receipt is tied to being in employment instead of considering the circumstances of the family as a whole. This has resulted in support gaps for individuals where 'making work pay' does not result in individual independence and an overall weaker redistributive power of welfare states (Cantillon 2011). Furthermore, the aim to increase employment has partially led to a reduction of reservation wages and weakened traditional social protection (Atkinson 2010).

The aim of this contribution is to empirically assess the income situation of women un-

der the adult worker paradigm. We compare the individual poverty situation of working-age women to the benchmark situation of 'typical' male workers, i.e. non-disabled, prime-aged male workers who fulfill the working full-time for most of their working life criteria often advocated for in the adult worker model. We will refer to these workers as male reference workers. If the basic principles of the adult worker model are correct, we would expect women in full-time employment to be in a similar financial situation as male reference workers. Taking its caveats into account, we further investigate how this might differ for women in atypical work arrangements or outside the labour force as well as the role of social protection in cushioning differences.

While poverty is usually measured at the household level, the social-political focus on individual independence through employment requires moving to an individual definition of poverty. By moving to an individual definition of poverty, we approximate the economic resources that a woman has control over and thus, her economic independence. In general even research using conventional measures of poverty find a sizeable gender gap in poverty for specific groups such as lone mothers and older women living alone (Pearce 1978, Hübgen 2018, Zaidi and Gasior 2011). We suspect the gap to be even larger because household level measures ignore intra-household inequality. We can expect this looking at those few studies that measured poverty at individual level (Fialová and Mysíková 2021, Findlay and Wright 1996). However, very little is known about the heterogeneity of this effect and the role of social policy in moderating the impact of gendered labour market differences on the individual poverty situation.

Our research assesses the relevance of the adult worker model. It contributes to a better understanding on how the higher individual poverty risks of women are shaped by differences in employment participation and how much by the job characteristics of employed women. The analysis furthermore assesses the role of the tax-benefit system in mitigating negative consequences for women who fall outside the social realm of a 'typical' worker. Methodologically, the analysis uses the tax-benefit microsimulation model EUROMOD for all EU-27 countries together with various individualised income scenarios. The former allows for a more fine grained allocation of family-level resources to different members of the household - an important prerequisite for measuring individual poverty risks - while the

latter provides an assessment of the sensitivity of the individual poverty risk to the chosen assumptions.

The rest of the contribution proceeds as follows. We first review evidence on female life courses and how they are shaped by social policy as a basis for focusing on the heterogeneity of poverty risk as well as literature on measuring individual poverty risks and the role of intra-household sharing. This is followed by a section on the methodological approach and the underlying data. Finally, we present findings and conclusions.

3.2 Literature

3.2.1 The 'masculinization' of female life courses and the role of social policy

Taking full account of women's poverty situation requires focusing on the interactions between family, labour market and the welfare state (Daly 1992). However, the work-family conciliation policies advocated for in the adult worker model have framed family as a nuisance to labour market participation and have shifted the focus away from the social situation of families towards the question of how family policy can support adults to be in employment (Saraceno 2015) (e.g. through early child care provision). This normative shift has led to a change in importance between the three dimensions, with the labour market being the central focus point. Instead of taking women's lived realities into account, they are encouraged to adjust to the stereotypical life course of men despite caring responsibilities continuing to fall disproportionately on women.

Pfau-Effinger's (1998) concept of gender arrangement highlights that women's employment is driven by the interplay of institutions with cultural, social and economic contexts. Even though bureaucratic regulations and social policy shape and regulate modern life-courses, often aiming for standardization, women's labour market participation have become more heterogeneous on the one hand and often less female-specific among younger cohorts on the other hand (Berger et al. 1993). Similarly, Korpi et al. (2013) argue that while gender differences become less prominent, inequalities between women from different

social classes have been on the rise. Berger et al. (1993) furthermore highlight the polarization of female life courses showing an increase in work-oriented life courses as well as an increase in life courses that are characterised by part-time work and sequential labour force participation. Thus, some female life-courses have become more similar to male ones but changes in labour market participation have led to very specific female working careers at the same time.

These female working careers have important implications for women's labour market security. A push for greater labour market flexibility in the late 20th century has led to the dualization of European labour markets with a high level of protection for labour market insiders on the one hand and an increase of less protected atypical outsider jobs on the other hand (Emmenegger et al. 2012). This has resulted in an increase of social inequalities between the so-called insiders and outsiders and also has an important gender aspect to it. While the traditional workforce is male dominated (the 'insiders'), women are more likely to work in atypical employment (Seo 2021) (i.e. part-time employment or temporary contracts as well as self-employment). Such work arrangements often have negative consequences in terms of income and job mobility (Schwander and Häusermann 2013), but also for their subjective job satisfaction and job prospects (Seo 2021). Part-time employment is furthermore often associated with unpaid care responsibilities for (grand)children (Chou et al. 2017). In the same vein, women are more likely to have career interruptions and this significantly increases their likelihood of atypical employment or of not being able to find work at all (Biegert 2014).

However, changes in female life courses have not only happened with respect to the labour market but also in terms of private and family life. The role of marriage and children has changed significantly leading to a separation of the two life events (Hayford et al. 2014, Hiekel and Castro-Martín 2014). The average age of marriage has increased in many countries (Cherlin 2014) and cohabitation has become more common (Lesthaeghe 2020). Also childlessness has increased (Merz and Liefbroer 2012). These changes have important implications for the role of income pooling and sharing within the household, highlight the importance of assessing the individual poverty situation of women.

These changes in life courses both with respect to labour market participation and

private life are also shaped by social policy. A prime social policy example that has had a significant impact on women's life courses is the European Union's social investment strategy which promotes policies that support labour market participation. The design of social protection needs to strike a balance between activation policies and adequate support for those who are not employed (Vandelannoote and Verbist 2020, Jara et al. 2020). Instead, 'making work pay' has led to decreases in public spending on income protection and to increases in spending for childcare and activation policies in many EU member states (Kuitto 2016, Noël 2020, Vandenbroucke and Vleminckx 2011). Similar approaches have been taken in many countries, for example the UK (Blair and Brown's Third Way approach), Germany (Hartz IV reform) and the US (Personal Responsibility and Work Opportunity Reconciliation Act).

Social policy has an important role in defining support-worthy living situations, for setting the conditions of entitlement and for deciding on suitable types of support in terms of cash versus in-kind benefits (i.e. child benefit versus services like childcare provision). It can set impulses for societal change but at the same time needs to take the lived reality of individuals into account which might be very different from the envisaged change. For example, the design of parental leave policies does not only impact on women's labour market participation but can also push women into different types of outsider jobs (Seo 2023). As a result, higher participation as promoted in the adult worker might be achieved but at the cost of an increase in working-poor women. This highlights the importance to understand how well tax-benefit systems support women's life courses that do not fit the idea of the 'typical' male worker and shape socially, desirable labour market behaviour.

3.2.2 Individual poverty risk and household sharing of resources

The standard way of measuring poverty goes back to Becker's unitary model (1974) which treats households as a single unit. The unitary model assumes that resources are pooled and equally distributed among all household members. By doing so, income differences within the household are disregarded. Instead, all household members face the same risk of being poor and intra-household inequality is fully ignored (Findlay and Wright 1996). This

is based on the underlying assumption of consensus between different household members about resource distribution and the disregard of conflicts of interest within the household (Daly 1992).

Although the shortcomings of this approach are widely accepted (see for example Bonke and Browning (2009), Chiappori (1992)), it is still the standard methodology used for official poverty statistics as well as in poverty research. This is partly explained by the lack of data on individual consumption and the unobservability of individual sharing preferences as well as the existence of family-level income sources (Karagiannaki and Burchardt 2020). To our knowledge, the only large scale dataset covering the subject is the EU-SILC 2010 thematic module on intra-household sharing of resources (Ponthieux 2017). An analysis across EU countries shows that over 47 percent of adults are living in multi-adult households where at least part of the household's financial resources are not fully shared (Ponthieux 2013). The extent of full pooling varies by household characteristics and is higher for married couples or couples with children and is lower for dual-earner couples as well as households where the woman contributes at least 30% of the household's earnings. These findings and also the broader context of individual independence as a core socio-political objective, calls for analysing the individual poverty situation rather than using outdated assumptions. Assessing the individual situation of women is especially important due to the feminisation of poverty (Pearce 1978) caused by increasing divorce rates, family instability leading to a higher incidence of lone mothers and the higher share of older women living alone.

Early empirical studies on individual poverty used generic assumptions to split incomes of married couples by multiplying disposable household incomes with different factors based on the gender of the individual (Borooah and M 1993, Findlay and Wright 1996). Other papers calculate indifference scales, where the utility of a person living alone is compared to the utility of the same person if they would be living as a couple using subjective indicators such as satisfaction with the financial situation as a proxy (Browning et al. 2013, Fialová and Mysíková 2021). While the former approach makes very crude assumptions on intra-household sharing patterns without taking the heterogeneity of individual market incomes and living situations into account, the latter focuses on individual income sources only

while disregarding family-level sources of income.

Instead, it is preferable to follow an approach that takes both the heterogeneity of family types and the heterogeneity of individual income sources into account. Building on previous work (see for example: Jenkins 1991, Sutherland 1997, Meulders and O’Dorchai 2010, Figari et al. 2011), Avram and Popova (2022) focus on all women and men rather than couple households only by individualising disposable income based on income sources. This methodological approach assumes minimum income pooling where individuals retain all their individual-level earnings and benefits and family-level resources are split based on pre-defined assumptions. The same methodology has been used by Doorley and Keane (2020) who find that the gender income gap is mostly driven by differences in working hours and only to a lesser extent by differences in wages. The methodology helps to gain a better understanding of the financial independence of women and men and allows for a more fine-grained analysis of heterogeneous effects beyond the male breadwinner family type. While men and women living alone are already assessed on an individual basis, individualising incomes does change the overall level of gender inequality because couples start contributing to this inequality.

The minimum income splitting assumption draws from empirical evidence on decision making processes within the household and factors that define the bargaining power of resource sharing. Earlier studies have found that the decision making process of households is shaped by the spouses’ individual resources and more specifically by the women’s income contribution (Blood and Wolfe 1960, Pahl 1983, Sorensen and McLanahan 1987). This still holds true in more recent work showing that a woman’s consumption and living standard in the household is strongly correlated with her share of earnings (Bennett 2013, Bonke 2015) or, more broadly, her share of income (Cantillon 2013, Himmelweit et al. 2013). Although women are more likely to decide over everyday purchases, men are the main financial decision makers of households and joint decisions become less likely with greater intra-household income inequality (Mader and Schneebaum 2013). In a similar vein, evidence focusing on individual material deprivation as an alternative outcome measure shows that individuals who contribute a higher share to the total household income are significantly less likely to be materially deprived (Karagiannaki and Burchardt 2020). Additional factors

influencing the intra-household bargaining power of individuals are work trajectories, the type of job and career potential (Kulic 2014), and as such characteristics linked to job quality. Satisfaction with the household's income situation is furthermore driven by the source of income with full-time employment income being valued the most and unpaid contributions valued less (De Henau and Himmelweit 2013).

Research on the role of money management and financial arrangements provides further evidence on individualised forms of controlling financial resources. It suggests that married couples use various financial arrangements of which only a few are egalitarian (Pahl 1983, Vogler and Pahl 1994). More recent studies on both married and non-married couples suggest a shift towards individualised financial arrangements (Pahl 2008, Kan and Laurie 2014) partly driven by the decline of male breadwinner families and the increase in cohabitation (Lauer and Yodanis 2011, Yodanis and Lauer 2007). These findings suggest that individualised forms of money management are going to play an even more significant role in the future due to the pluralisation of family forms (Jensen 2009). This in turn might have implications for the individual sharing of family-level benefits as the person providing the bank details is also the person who ends up with the benefit on their individual account (see for example the Universal Credit in the UK).

Apart from this evidence, assuming limited sharing of resources can also help to assess the potential negative economic consequences of union dissolution or more broadly the level of financial independence that allows one to leave the household if necessary. Thus, even if unitary sharing of resources were true, it would only provide protection against poverty if partners stay together but not in case of divorce or separation (Mortelmans 2020), which often leads to negative economic consequences for women (de Vaus et al. 2017, Popova and Navicke 2019) and might also increase the risk of staying in harmful relationships. Thus assessing the individual poverty situation is important in its own right even if in reality resources are shared as it is assumed in standard poverty indicators.

We build on the methodology developed by Avram and Popova (2022) but focus on poverty instead of mean incomes. This focus on the bottom of the income distribution leads to partially different policy conclusions than focusing on mean incomes. We furthermore add to the literature by assessing the role of labour market participation and job

characteristics to better understand how these characteristics shape women’s individual poverty risks in an environment that is focused on pressing women into the mould of ‘typical’ male workers. As such, we also build on the work by Doorley and Keane (2020) but focus on gender poverty gaps instead of gender income gaps and highlight more explicitly the situation of women in different labour market situations and work arrangements as well as the role of different tax-benefit elements. The analysis provides an additional lens to the results presented in the other papers as it not only analyses women’s situation compared to the benchmark situation of male reference workers but also examines how achieving a minimum income standard (an income situation above the poverty threshold) varies for women who do not fit the mould. The individual poverty results provide an indication of women’s financial position with the poverty threshold defining a benchmark of achieved independence.

3.3 Methodology

3.3.1 Data and sample

The analysis is based on the 2019 European Union Statistics on Income and Living Conditions (EU-SILC), the most recent year for which data was available at the time of writing. The survey is available for all EU countries and includes detailed and representative information on the income situation of households and the characteristics of their members.

The analysis uses a pooled sample of all European Union countries to show the situation of women across the EU. All results focus on individuals aged 25 to 55 to capture the core working-age population taking country-specific differences in university attendance and early retirement rates into account.

3.3.2 Defining individualised incomes

Measuring individual poverty risk requires calculating individualised income. This is based on disposable income which is the result of gross market incomes net of direct taxes and social insurance contributions (SIC) plus individual and family-level transfers within the

household.

Following Avram and Popova (2022), the attribution of different income sources to the members of the household is carried out in several steps.

First, all individual gross market incomes are retained by the individual receiving them based on the minimum income sharing assumption. As such, we assume that the actual recipient of the income source is the one who controls it due to lack of information how it is actually shared within the household.

Second, market income sources that are not assessed at the individual level are attributed to different household members. Investment and property income is either split equally among the oldest couple of the household or attributed to the oldest person in the household. This decision has been made based on the life-cycle hypothesis (Modigliani 1966) which stipulates that wealth requires long periods to accumulate and increases over the lifetime up to retirement. Non-individual income from other sources such as private transfers are split equally among all adult household members. Even though this is a strong assumption given that Sierminska (2017) finds a strong gender gap in wealth, the importance of such incomes is comparably small for most households.

Finally, tax-benefit elements such as direct taxes, social insurance contributions as well as individual and family-level benefits need to be assigned to different household members. This step is often the reason why previous research has focused on generic overall sharing assumptions. Survey data often only provides direct taxes and social contributions at the household level and information on benefit receipt is usually aggregated into larger benefit groups sometimes mixing individual and family-level transfers. The use of the tax-benefit model EUROMOD allows us to deal with these difficulties.

EUROMOD is an open-access model available for all EU countries which uses reported information on market incomes and the compositional characteristics of household members to simulate disposable household incomes (Sutherland and Figari 2013).

Using the model has several advantages. First, it allows to simulate direct taxes and social insurance contributions at the taxpayer unit level. While this is the individual level in most countries, taxes are allocated to individuals in proportion to their taxable income in countries with joint taxation. Second, the model allows to differentiate between the

household and the benefit unit, with the benefit unit often being smaller than the household. Family-level benefits are split among adults in the benefit entitlement unit, based on the applied individualised-income scenario (see next subsection) while individual-level benefits are assigned to the individual receiving them. Even though not all benefits can be simulated in the model, a great effort has been made to disaggregate benefits in the underlying input datasets of each country model. In most cases, this allows to also attribute non-simulated benefits to members of the respective benefit unit. In a small number of cases this is not possible and benefits are split between all adults in the household. All of the above leads to a more detailed and individualised dataset, better suited to analyse the individual poverty situation than the original EU-SILC data. Finally, the detailed assignment of tax-benefit elements allows to not only calculate individual disposable income but also other individualised income concepts such as for example individual market incomes net of taxes and social insurance contributions which can be used to assess the welfare impact on individual poverty risks.

Individualised-income scenarios

Family-level benefits are assigned to adults within the benefit entitlement unit using three different individualised-income scenarios in order to test the sensitivity of the assumptions.

In the primary earner scenario (PE), family-level benefits are assigned to the person with the highest earnings within the benefit unit (or the highest market income if earnings alone cannot determine a unique primary earner). The assumption is that this person has the highest bargaining power in the household and can decide how to use the resources which in turn limits the independence of other members.

In the secondary earner scenario (SE), family-level benefits are assigned to the partner of the primary earner instead. The secondary earner is defined as the partner of the primary earner; or as the person with the second highest earnings or market/replacement income if the primary earner has no partner. The assumption of this scenario is more from a social-political perspective where the family-level benefit is treated as a type of replacement income for the person with lower earnings in the unit.

The third scenario is based on equal sharing (EQ). All family-level benefits are split

equally between all adults in the benefit unit as from a normative point of view, common benefits are meant to benefit all members.

In addition, we also show results using the standard unitary model of household sharing (U) for a comparison between the standard way of measuring poverty and the individualised risk results.

Accounting for economies of scale

To account for economies of scale in consumption and be able to compare individuals living in households with different sizes and/or compositions, we adapt the ‘modified OECD’ scale for use with individualised incomes. The ‘modified OECD’ scale assigns a weight of 1 to the first adult, 0.5 to subsequent adults, and 0.3 to children.

We modify this scale in two steps. First, we add the weights of adults living in the same household and divide them by the number of adults present. Second, we take into account the cost of having children by attributing the weight of children to their parents. When both parents are present, we assume that the costs of their children are split equally. Children are defined as individuals below 18 years, unless they live in single-person households.

Note that we do not use equivalisation as a means of addressing intra-household allocation of resources. We do not have separate data on consumption in our datasets. As such, we are not able to model intra-household differences in consumption. In this context, equivalisation is used solely to account for economies of scale and to enable comparisons between individuals living in households of different size.

3.3.3 Individual poverty risk

Across the EU, poverty is measured in relative terms by using a poverty line that is typically set at 60 percent of the national median equivalised disposable household income. Everyone with incomes below this threshold is defined as being at risk of poverty. The individual poverty measure applied in this contribution uses this standard national poverty line across all individualised-income scenarios. This is to use the same benchmark for women’s economic situation in all scenarios. Given that our individualised disposable income as-

sumes minimum income pooling, the estimated measures are closer to capturing financial independence than being a true poverty measure. We still refer to it as individual poverty risk due to it being an established term in the literature.

The main focus of the analysis is the individual poverty risk of women (P_w). Their risk is compared to the overall situation of men (P_m) as well as to the situation of male (P_{mrw}) and female reference workers (P_{frw}). Reference workers (RW) are defined as individuals who are in employment or self-employment for the whole year, working at least 35 hours a week and having worked at least two-thirds of their adult life (i.e. who have high work experience). Work experience is defined relative to age by dividing the overall number of years in employment to the number of years aged 20 or older. Age-standardised values of at least 0.666 classify as high work experience.

The comparison of poverty risk levels is carried out in two ways. First, the classic *gender poverty gap* (GPG) is used to show differences between women and men as well as between female reference workers and male reference workers (i.e. two equally defined population subgroups). Results are presented in absolute terms and expressed in percentage point difference.

$$\begin{aligned} GPG_{overall} &= P_w - P_m \\ GPG_{RW} &= P_{frw} - P_{mrw} \end{aligned} \tag{3.1}$$

Secondly, a new gap measure is introduced to assess poverty risks through the adult worker model lens. The *reference worker poverty gap* (RWPG) compares the poverty risk of a group (i) to the benchmark situation of male reference workers. It highlights how the situation of the group differs from that of 'ideal' working-age individuals as defined in the adult worker model. Again, results are presented in absolute terms and expressed in percentage point difference.

$$RWPG_i = P_i - P_{mrw} \tag{3.2}$$

Heterogeneity of labour market characteristics

In a next step, an in-depth analysis shows how the female RWPG differs by labour market characteristics. The analysis focuses on women with different economic status and job

characteristics.

Several logit regression models are fitted to calculate the probability of being at risk of poverty using being poor as the dependent variable. The main model assesses differences by economic status. It uses information on the self-declared current main activity status and differentiates between employment, self-employment, unemployment or inactivity (in education, retired or other reasons for inactivity including maternity leave).

Additional models interact employment with job characteristics. Separate logistic regressions are fitted to assess the probability of being poor of those in employment with different working hours (marginal part-time of less than 20 hours per week, substantial part-time of 20-34 hours, full-time of 35 hours or more following the ILO statistical definition), different skill-levels of the job (low-skilled, medium-skilled, high-skilled jobs²) and different levels of work experience (differentiating between low (less than one third), medium (less than two third) and high work experience (at least two third)).

All models control for differences in age, gender, education (low educated, middle educated, highly educated³), citizenship, partnership (married and non-married), household types (one adult, two adults, lone parent, 2 adults with one child, 2 adults with 2 children, 2 adults with 3 or more children, other households) and whether there is a young child aged 0-5 in the household. All models furthermore include country-fixed effects. The average marginal effects of each model are available in Table A3.2 - A3.5 in the Appendix.

Finally, the average predicted probability of being poor of each subgroup of women is assessed against the benchmark of male reference workers. This allows to show the heterogeneity of the female RWPG by labour market characteristics (l) applying the adult worker model lens.

$$RWPG_{w^l} = P(P_w|l) - P_{mrw} \quad (3.3)$$

²Based on the ISCO skill level classification: low-skilled refers to elementary occupations; medium-skilled refers to clerks, service and sale workers, skilled agriculture, craft and trades worker, plant and machine operators; high-skilled refers to senior officials and managers, professionals, technicians and associate professionals

³Based on ISCED standard classification of education: low educated refers to less than primary, primary and lower secondary education, middle educated refers to upper secondary education, highly educated refers to post secondary and tertiary education.

The welfare impact

The final section of the empirical analysis focuses on the welfare impact of taxes and SIC as well as benefits. The role of the tax-benefit system is assessed for women overall as well as by labour market characteristics.

This requires to calculate female RWPGs for different income concepts. The income concept used in all other empirical sections is disposable income (dY), i.e. market incomes (m) net of taxes (t) and SIC (s) plus benefits (b). This is compared to RWPGs based on gross market incomes only (mY) as well as two intermediary income concepts, one excluding benefits (bY) and one excluding taxes and SIC (tY).

$$\begin{aligned}mY &= mY \\bY &= mY - t - s \\tY &= mY + b \\dY &= mY - t - s + b\end{aligned}\tag{3.4}$$

Comparing RWPGs based on each of the three additional income concepts with the standard disposable-income based RWPGs allows to assess the extent to which tax-benefit systems cushion gendered labour market differences overall (WI) and the separate role of benefits (BI) and taxes and SIC (TI). The applied benchmark poverty risk level of male reference workers is income concept specific. The RWPG for benefits and the RWPG for taxes and SIC do not add up to the overall welfare impact due to the non-additive nature of the poverty risk indicator.

$$\begin{aligned}WI_w &= (P_w^{mY} - P_{mrw}^{mY}) - (P_w^{dY} - P_{mrw}^{dY}) = RWPG_w^{mY} - RWPG_w^{dY} \\BI_w &= (P_w^{bY} - P_{mrw}^{bY}) - (P_w^{dY} - P_{mrw}^{dY}) = RWPG_w^{bY} - RWPG_w^{dY} \\TI_w &= (P_w^{tY} - P_{mrw}^{tY}) - (P_w^{dY} - P_{mrw}^{dY}) = RWPG_w^{tY} - RWPG_w^{dY}\end{aligned}\tag{3.5}$$

The heterogeneity of the welfare impact is calculated fitting logit models for each of the income concepts and following the same logic for calculating the welfare impacts as for the overall results of women.

3.4 Results

3.4.1 Descriptive overview

Table 3.1 provides an overview of the characteristics of women in comparison to men as well as female reference workers and male reference workers. It does not only highlight how women differ from men in their living situations but also to what extent each group can be characterised as reference workers.

While 62 percent of men can be characterised as reference workers, only 36 percent of women correspond to the stereotype. Instead, women are more likely to be inactive (18 vs. 7 percent), to work part-time (23 vs. 6 percent) and to have disrupted careers (36 vs. 23 percent have worked less than two-thirds of their adult life).

Partnership and household composition play a more prominent role for women than for men. While women with partners are less likely to be reference workers, the opposite is true for men. One factor are children and related care responsibilities. While women with young children in the household are substantially less likely to be reference workers this is not the case for men (14 vs. 22 percent).

In addition, the educational gradient of full-time labour market participation is more significant for women than for men. Female reference workers are more likely to be highly-skilled than the overall sample of women which is not the case for men. This is also reflected in the skill-level of jobs. Almost half of the female reference workers work in high-skilled jobs compared to 40 percent of male reference workers.

Table 3.1: Descriptive sample overview

	Women		Men	
	Total	Reference worker only	Total	Reference worker only
Personal characteristics				
Average age	41	42	41	42
Low educated	18.2	9.7	21.5	16.1
Middle educated	37.5	40.2	42.7	47.3
Highly educated	44.2	50.1	35.8	36.6
With partner	56.3	53.5	50.7	59.1
Labour market characteristics				
Stereotypical worker	36.0	100.0	62.1	100.0
Employed	66.8	89.8	73.1	85.0
Self-employed	7.7	10.2	13.4	15.0
Unemployed	7.3	0.0	6.7	0.0
Inactive	18.2	0.0	6.8	0.0
Civil servant	10.2	12.9	8.7	9.6
Marginal part-time work (<20 hours)	3.9	0.0	0.9	0.0
Substantial part-time work (20-34 hours)	18.6	0.0	5.3	0.0
Full-time work (35+ hours)	59.8	100.0	85.5	100.0
No work experience	6.1	0.0	2.3	0.0
Low work experience (less than a third)	10.8	0.0	7.5	0.0
Medium work experience (less than two-thirds)	18.6	0.0	13.1	0.0
High work experience (at least two-thirds)	64.5	100.0	77.1	100.0
Low-skilled job	6.3	6.4	6.5	6.5
Medium-skilled job	32.9	44.2	44.8	53.1
High-skilled job	35.3	49.4	35.2	40.4
Secondary earner	49.9	39.9	15.0	13.2
Household characteristics				
1 adult	11.2	14.6	16.2	14.1
2 adults	19.3	22.9	19.7	18.7
Lone parent	6.9	7.1	1.4	1.7
2 adults, 1 child	16.9	16.5	15.6	17.9
2 adults, 2 children	18.6	16.7	18.1	22.0
2 adults, 3+ children	5.9	3.5	5.7	6.4
Other households	21.2	18.6	23.3	19.2
Young child (0-5) in household	21.1	13.6	20.0	21.6
Number of earners	1.8	1.9	1.8	1.9
Sample size	109,669	43,835	103,753	64,376

Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Sample restricted to men and women aged 25 to 55.

This sample overview provides a good starting point for the analysis of individual poverty risks and the role of the welfare state as it highlights the large share of women who do not fit the stereotype promoted by the adult worker model and who might not be able to sustain a living standard above the poverty threshold if their living situations are disregarded in the design of social policy in general and anti-poverty measures specifically. It furthermore suggests that assumptions about sharing of household resources are crucial in assessing the individual poverty risk especially in situations where women are not working due to caring responsibilities.

3.4.2 Gender differences in poverty risks

Figure 3.1 shows poverty rates by gender (total and reference workers only) and scenarios. Overall, the poverty risk of women and men is not significantly different from each other when the standard unitary model of household sharing is assumed. The majority of working-individuals live with at least one other household member and thus, this is to a large extent the result of income pooling.

The gender difference in poverty increases when moving to individual poverty rates. While individual poverty rates only increase slightly for men⁴, they increase between 15 and 18 percentage points for women. These increases for women differ slightly between individualised-income scenarios, with the secondary earner scenario showing lower rates than the other two scenarios. The level of men's individual poverty risk is not affected by assumptions on sharing of family-level benefits.

Overall and across groups, differences between individualised-income scenarios are relatively small compared to the difference between the individual scenarios and the unitary model. This suggests that individual income sources and individual-level benefits play a more significant role in individual poverty levels than family-level benefits.

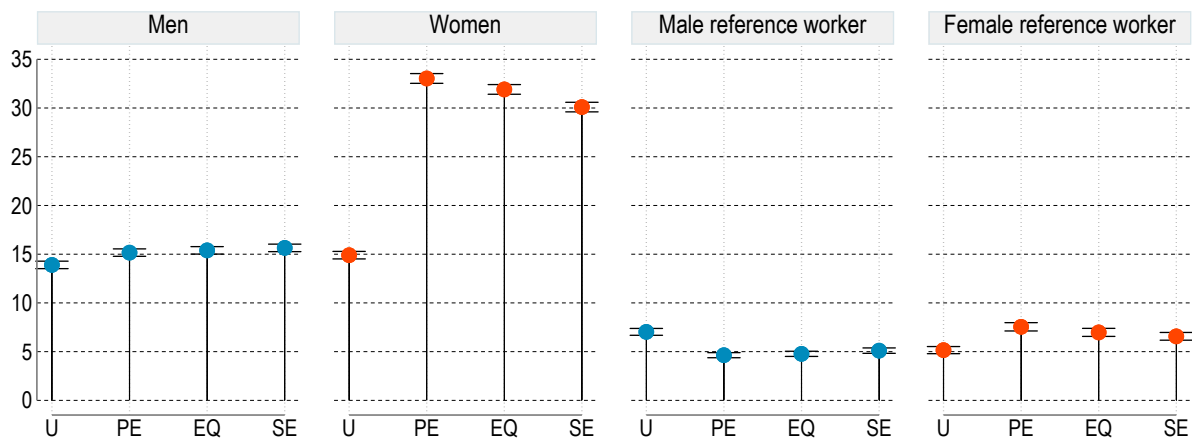
For both men and women alike, poverty rates are smaller for reference workers but gender differences remain. Male reference workers have a 10 percentage point lower risk than men overall across individualised-income scenarios. Female reference workers have a more than 20 percentage points lower risk than women overall. Although still quite pronounced for men too, the higher difference for women is largely due to the smaller share of women fitting the adult worker model. While the individual poverty rate of male reference workers is lower than their unitary rate, the individual poverty rate of female reference workers is higher than their unitary rate. Especially for male reference workers, the choice of individualised-income scenario has very little influence on the poverty rates.

The poverty levels of male reference workers in each scenario are used as the benchmark for the RWPGs in the following sections. This benchmark refers to a poverty level of 7.0%

⁴The small number of men with higher individual than unitary poverty levels are mostly unemployed or inactive and live with other adults.

in the unitary model, 4.6% in the primary earner scenario, 4.8% in the equal sharing scenario and 5.1% in the secondary earner scenario.

Figure 3.1: Poverty rates by sharing assumption



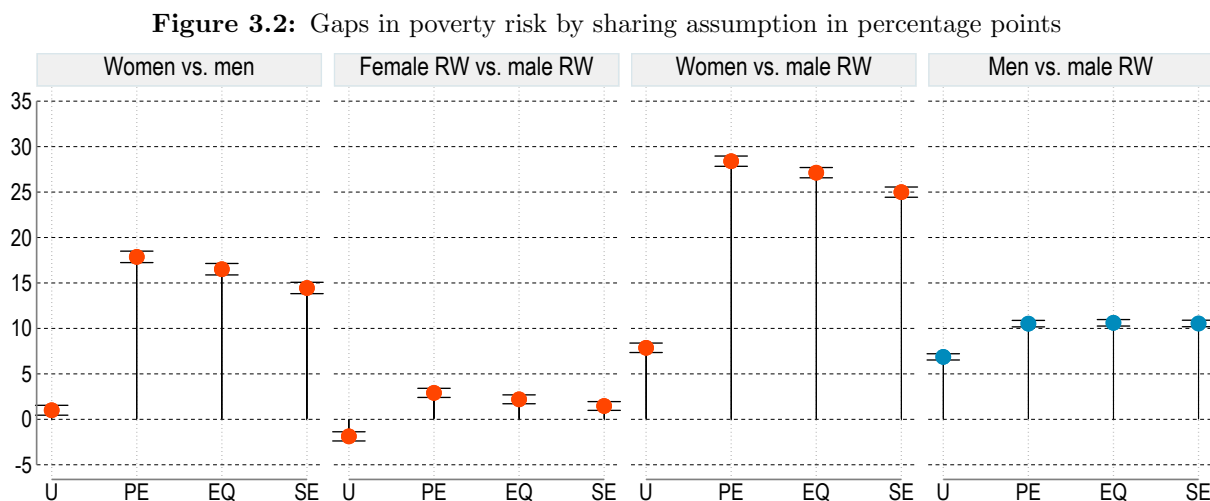
Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Based on disposable incomes. U refers to unitary model, PE refers to the primary earner individualised-income scenario, EQ to the equal sharing individualised-income scenario, SE to the secondary earner individualised-income scenario. Sample restricted to men and women aged 25 to 55.

The greater gender disparities in individual risks lead to a significant overall gender poverty gap (women compared to men) and a very pronounced RWPG of women (women compared to male reference workers). Figure 3.2 visualises the difference in poverty risks for each scenario and shows that the gap is between 14 and 18 percentage points for the overall sample and above 25 percentage points when comparing the individual risk of women to the individual risk of reference male workers. In contrast, the gender gap in poverty is 1 percentage point and the RWPG of women 8 percentage points when focusing on the unitary model.

Comparing the RWPG of women to the RWPG of men (men compared to reference male workers) shows that the women’s RWPG is significantly higher than the gap for men. Again, this is partly driven by the higher share of men who can be described as reference workers. However, this is only one explanation. Focusing on the gender gap between female and male reference workers shows that the difference is still significant, ranging between 1 and 3 percentage points. This indicates that the difference is also driven by differences in labour income between female and male reference workers. Again, the unitary model hides

this difference completely and actually indicates that the risk of female reference workers is lower than the risk of male reference workers. One explanation for this is the role of assortative mating and the relationship between women’s earnings and their husband’s occupational status (Sweeney and Cancian 2004) which influences the result of the unitary model.



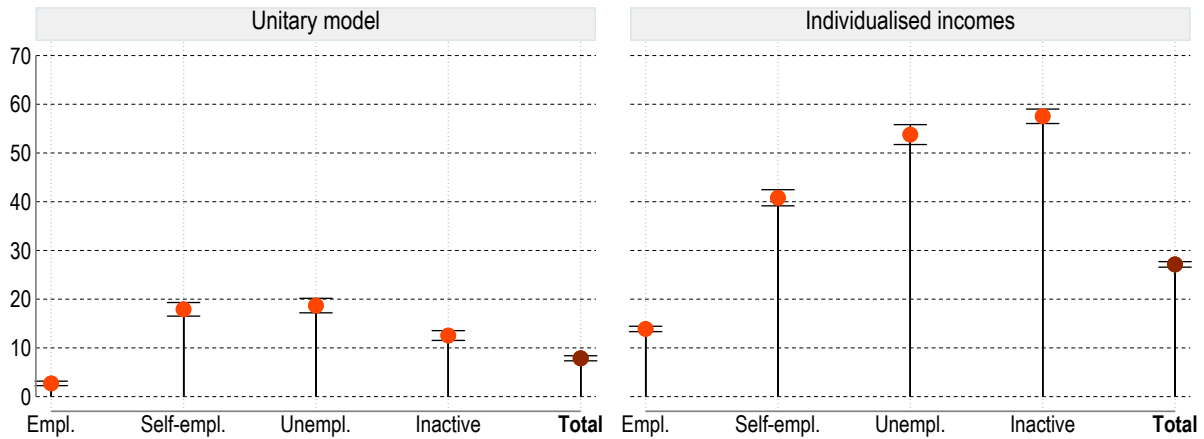
Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Based on disposable incomes. RW refers to reference workers. U refers to unitary model, PE refers to the primary earner individualised-income scenario, EQ to the equal sharing individualised-income scenario, SE to the secondary earner individualised-income scenario. Sample restricted to men and women aged 25 to 55.

3.4.3 The role of gendered labour market differences

This section focuses on the heterogeneity of women’s RWPG by labour market characteristics, using the overall poverty risk of male reference workers as the benchmark. Figure 3.3 shows differences in the RWPG of women by economic status while Figure 3.4 zooms in on women in employment, providing RWPG results by different job characteristics. Both graphs compare the unitary model results with the individualised results using the equal sharing assumption for family-level benefits. Results for the other two individualised-income scenarios are available in the Appendix (see Figure A3.1 and Figure A3.2). The equal sharing scenario is between the secondary and the primary earner scenarios and in most cases leads to results that are not significantly different from those that use the primary earner assumption.

Figure 3.3: RWPG of women by economic status and sharing assumption



Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Sample restricted to women aged 25 to 55. Women’s probability of being at risk of poverty compared to the risk of male reference workers, controlling for personal and household characteristics, incl. country-fixed effects. The individualised-income scenario is based on the equal sharing assumption for family-level benefits.

Figure 3.4: RWPG of employed women by job characteristics and sharing assumption



Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Sample restricted to women aged 25 to 55. Employed women’s probability of being at risk of poverty compared to the risk of male reference workers, controlling for personal and household characteristics, incl. country-fixed effects. Results are based on the interaction of the shown job characteristic with employment. The individualised-income scenario is based on the equal sharing assumption for family-level benefits.

Starting with differences by economic status, the unitary model suggests a very small RWPG of employed women (3 percentage points). However, the individualised-income scenario shows that this is clearly not the case. Even though, the gap is smallest for women in employment and significantly below the overall RWPG, it is still at 14 percentage points. Thus, being in employment in general does not necessarily lead to a poverty risk and economic independence level similar to those of male reference workers.

Worryingly, self-employed women have a very high RWPG: individual poverty rates are around 40% higher than those of male reference workers. Even though they participate in the labour market, being self-employed does not necessarily lead to an individual standard of living equal to the situation of male reference workers.

The unitary model furthermore hides the very high RWPG of inactive women who show a higher gap than unemployed women in the individualised-income scenario compared to a significantly lower gap in the unitary model. Both groups of non-employed women - unemployed and inactive - face an individual poverty risk that is at least 55 percentage points higher than the risk of male reference workers, highlighting the very precarious individual situation of one quarter of women.

Although the share of women in employment is only 6 percentage points lower than the share of men, only 36 percent of women can be characterised as reference workers, compared to 62 percent of men. Thus, gender differences in factors that constitute a 'typical' worker such as full-time work and undisrupted working careers together with gender differences in the skill-level of the job provide further insights.

The role of job characteristics is less pronounced in the unitary model but important when moving to the individualised-income scenario. Gender differences are for example completely hidden for employed women in full-time employment, with highly-skilled jobs or with significant work experience. The unitary model furthermore hides the precarious situation of women with other job characteristics as most of the unitary model-based RWPGs are below or not significantly different from the mean RWPG for all women.

Moving to the individualised-income scenario, the differences in RWPGs of employed women are most pronounced between different working hour arrangements. Women in marginal part-time employment (less than 20 hours a week) have a close to 60 percentage

point higher risk to be in poverty than male reference workers. Thus, even though they are employed, they are far from being in a good financial position. Although the unitary model suggests that being in marginal employment is better than being unemployed or inactive, this is no longer the case when moving to the individualised income definition. The gap is significantly lower but still high for women in substantial part-time employment who work between 20-34 hours per week (23 percentage points). With a RWPG of below 10 percentage points, women in full-time employment are in a much stronger position than women overall and women with less working hours. However, even their RWPG is slightly larger than the overall gender gap between female reference workers and male reference workers which is below 5 percentage points (shown in Figure 3.2).

The second characteristic that defines a reference worker is work experience. Women who have worked less than a third of their working-age life show a RWPG that is comparable to the overall average of women, while women with more work experience have significantly lower gaps. However, women with almost no interruptions in their career are still faced with a 5 percentage points higher poverty risk than male reference workers.

Finally, differences due to the skill-level of the job show similarities to the RWPG based on differences in work experience for the low and middle category but significantly lower gaps for women with highly-skilled jobs.

3.4.4 The role of the tax-benefit system

The final empirical section analyses the impact of the tax-benefit system on the RWPG of women with different economic status and job characteristics. It shows the extent to which living situations that diverge from the 'ideal' worker are supported by the welfare state. This section focuses on results based on individual poverty only using the equal sharing scenario for family-level benefits. Results for the unitary model and the other two individualised-income scenarios are available in the Appendix (see Table A3.6).

Table 3.2 compares the RWPG of women based on gross market incomes to their already presented disposable income-based RWPG. The difference between the two indicators represents the total welfare impact of the tax-benefit system. Comparing the two indicators

shows the differences in starting points (gross market income-based RWPG) and the role of the tax-benefit system in mediating gender-based labour market differences. The table furthermore presents the welfare impact of benefits (RWPG based on disposable income excluding taxes and SIC compared to disposable income based-RWPG) as well as the welfare impact of taxes and SIC (RWPG based on disposable income excluding benefits compared to disposable income based-RWPG). The poverty line is fixed across all income concepts.

The tax-benefit system reduces the RWPG as it has a greater overall impact on the poverty situation of women than on the situation of male reference workers. While the poverty rate of women decreases when moving from gross market to disposable incomes, the poverty rate slightly increases for male reference workers (see poverty rates in Table A3.7 in the Appendix). This leads to an overall welfare impact on the RWPG of 4 percentage points.

The welfare impact varies greatly between women with different economic statuses but less among employed women with different job characteristics. The situation of unemployed and especially inactive women is significantly worse when focusing on the gross market income-based RWPG and is substantially improved by the tax-benefit system. Taking the welfare state into account reduces the gap by 11 and 16 percentage points. In comparison, the reduction for employed women is 3 percentage points. Benefits support the living situation of women who are furthest from the 'ideal' worker stereotype (see second-last column) and moves them closer to the situation of employed and self-employed women, flattening differences by economic status. Still, the magnitude of support is not sufficient to lift the majority of inactive and unemployed women above the poverty threshold leading to the very high disposable income-based RWPG for these two subgroups.

The welfare impact of women in atypical employment (part-time work and self-employment) is far less pronounced. The total welfare impact for substantially and marginally part-time employed women is 3 percentage points and the tax-benefit system even leads to a 2 percentage points increase in the gap for self-employed women. This leads to a situation where women are in principal closer to the profile of male reference workers but the gap is still very large and not adequately cushioned by the tax-benefit system.

Table 3.2: Individualised RWPG based on different income concepts and welfare impact on the RWPG

Indicator:	RWPG based on		Total	Role of	
Income concept:	Gross market income	Disposable income	welfare impact	benefits	taxes, SIC
By economic status					
Employed	16.6	13.9	-2.7	-5.7	2.6
Self-employed	38.5	40.8	2.3	-5.1	7.9
Unemployed	64.5	53.8	-10.7	-15.1	4.1
Inactive	73.3	57.5	-15.8	-18.9	3.8
Employed women by working hours					
Substantial part-time	59.4	56.3	-3.1	-12.1	8.9
Marginal part-time	26.1	23.4	-2.8	-10.1	6.6
Full-time	12.3	7.9	-4.3	-5.7	1.0
Employed women by work experience					
Low	29.8	25.2	-4.6	-7.5	3.5
Medium	23.7	16.9	-6.9	-9.5	1.5
High	17.6	12.3	-5.4	-7.6	2.0
Employed women by skill-level of job					
Low	27.4	23.3	-4.2	-8.2	3.3
Medium	21.1	16.1	-5.0	-7.8	2.4
High	15.5	9.4	-6.1	-7.5	1.3
Total	30.7	27.1	-3.6	-6.6	2.7

Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Total welfare impact = RWPG gross market income - RWPG disposable income. Role of benefits = RWPG disposable income excl. taxes and SIC - RWPG disposable income. Role of taxes and SIC = RWPG disposable income excl. benefits - RWPG disposable income. Results are based on the individualised-income scenario using the equal sharing assumption for family-level benefits. See Table A3.6 in the Appendix for results on other scenarios.

The last two columns of Table 3.2 shed light on whether this is because women in atypical employment, even if their gross market incomes are low, do not receive benefits or whether this is due to the structure of taxes and SIC. The gap-increasing role of taxes and SIC is much larger for women in atypical employment than for other subgroups. Even though self-employed women are further from the gross market income situation of male reference workers than employed women and women in part-time employment further than full-time employed women, they are disproportionately affected by the design of tax systems and SIC. While the role of benefits for women in part-time employment is comparable to that of unemployed and inactive women, this is not the case for self-employed women. Thus, benefits cushion the disproportionate effects of taxes and SIC for women in part-time work but are not sufficient to do the same for self-employed women which explains their gap-increasing welfare impact. This suggests important differences in welfare support for part-time employed women as opposed to women with low incomes from self-employment.

Another interesting subgroup are women in full-time employment whose gross market income-based RWPG is 4 percentage points higher than the disposable-income based

RWPG. While taxes and SIC affect women in full time employment in a similar way to male reference workers, benefits play an important role in reducing gendered labour market differences. This is partly driven by a higher concentration of full-time working women below the poverty threshold, i.e. full-time working poor women, compared to male reference workers, leading to a more pronounced poverty-reducing effect of benefits.

3.5 Conclusion

Social policy debates as early as the 1950s have focused on the activation of individuals into employment. The so-called adult worker model assumes that being in full-time employment for most of the working-age life guarantees a good standard of living and lower dependence on social protection. This however equates jobs with good working conditions and fair pay; ignores women's reality of part-time work, unpaid care work and the gender pay gap; and has often resulted in the weakening of traditional social protection.

The aim of this contribution is to empirically study the individual situation of women under the adult worker paradigm across the EU. It assesses the individual poverty situation of working-age women relative to the benchmark situation of 'typical' male workers, i.e. male reference workers.

Following Avram and Popova (2022), the analysis uses a novel methodology to calculate individualised incomes based on EUROMOD, the tax-benefit microsimulation model for all EU-27 countries, together with EU-SILC 2019 data. This allows for moving away from the standard unitary model of household income pooling and assuming minimal income sharing instead. We thus obtain an individual poverty measure that approximates the level of economic dependency of women.

The analysis introduces a new measure - the reference worker poverty gap (RWPG) - which compares the individual poverty situation of women to the benchmark situation of male reference workers. This adult worker model lens helps to understand the extent to which the paradigm is already a lived reality of women and indeed leads to economic independence. It furthermore helps to assess the situation of women who fall outside the realm of a 'typical' worker and who are perhaps not sufficiently considered in the adult

worker model and consequently the design of social policy under this paradigm.

Descriptive results show that women are by far less likely to fit the archetype of a reference worker and thus, do not live the life advocated for in the adult worker model. While 62 percent of men can be characterised as reference workers, this is only true for 36 percent of women. This overall smaller share of women fitting the model leads to a much higher individual poverty risk of women resulting in a very high RWPG of more than 25 percent. This is partly driven by women being unemployed or inactive but also driven by women in atypical employment.

The individual assessment of women's economic dependency helps to move to a greater gender awareness of the adult worker model and highlights the importance to fit the stereotype as closely as possible. Even though gender differences in disposable incomes are to a large extent driven by gender differences in employment status (Doorley and Keane 2020), the current analysis shows that decreasing these differences itself will not be sufficient to close the female RWPG. While Jara and Popova (2021) show that secondary earners are better off if employed than unemployed, the current analysis shows that the economic independence of women in marginal part-time employment is as low as it is for unemployed women. Only women in full-time employment show a small RWPG and even for them, there is still a sizeable RWPG between full-time working women and male reference workers. This potentially vulnerable position of full-time employees is currently neglected in the adult worker model and reiterates results on working-poor women in the EU (Schwarz 2023).

Additionally, work experience or working in a high skill-level job by themselves lead to considerable RWPGs and need to be coupled with full-time employment. This is, however, often difficult to be achieved in reality. Around one in four women in the EU are currently working substantial part-time hours and thus, face a RWPG that is significantly higher than women in full-time employment. Advising part-time employed women to adjust to the life-course of a 'typical' worker falls short in acknowledging the lived reality of women and their manifold reasons for working less such as for example child care obligations. Instead, the adult worker model needs to be reimagined by considerably reducing the gender blindness of the paradigm.

While the overall RWPG-reducing effect of the tax-benefit system is low (4 percentage points), there is considerable variation depending on her economic status and labour market characteristics. Benefits significantly reduce gross market income-based RWPG leading to an 11 and 16 percentage points lower disposable income-based RWPG. While this is an important contribution of tax-benefit systems, it is not generous enough to close the gap. In addition, self-employed woman who also show a high RWPG are not supported in the same way which raises the question about self-employed individuals access to in-work benefits.

Additionally, women in atypical employment are faced with disproportionate effects of taxes and SIC. This highlights the importance of not only focusing on the support side of welfare states but also considering the distributional effects generated by taxes and SIC. Even though the role of taxes and SIC is also highlighted in Avram and Popova (2022), they identify them as equalising mean income differences between men and women. The findings in this contribution show that this is not the case for the bottom of the income distribution where taxes and SIC deepen the individual poverty situation of women more than they affect male reference workers.

The presented results encourage more research on the design of tax-benefit systems from an adult worker perspective with a specific focus on the situation of women. More in-depth knowledge is certainly needed on how the design of income taxes and SIC punishes atypical workers. Additionally, cross-country specific analysis can focus on differences in policy designs and how this effects the RWPG. Results on the welfare impact based on different individualised-income scenarios (presented in the Appendix) furthermore suggest that the framing of social support is very important. Are they for example presented as replacement income for unpaid care work and paid to the individual carrying out the work or are they presented as family level benefits for households with children in general?

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Appendix 3

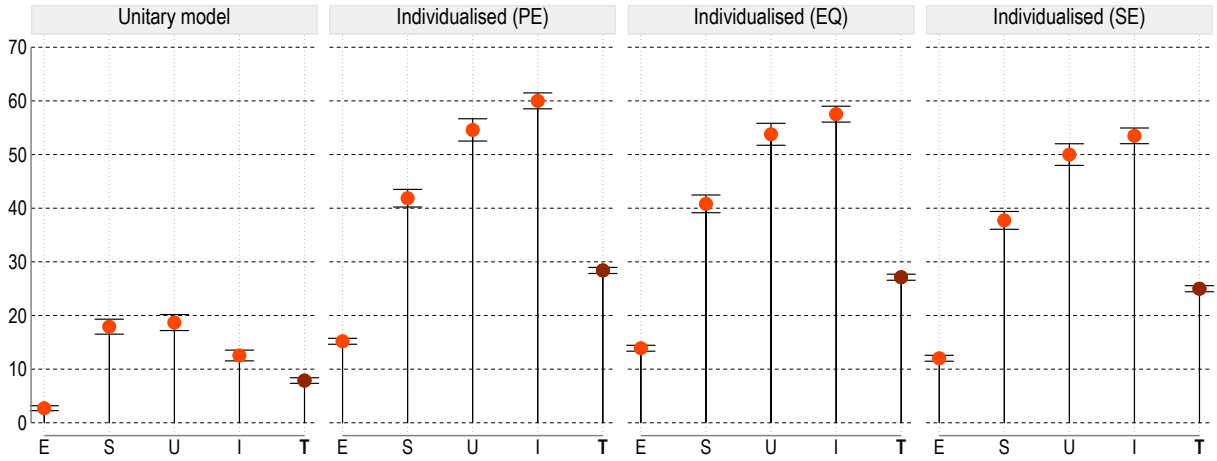
Table A3.1: Background indicators, 2021

	Women in employment		Children in formal childcare			
	Total	Thereof part-time	Aged 0-2		Aged 3-school age	
	Total	Thereof part-time	Total	Thereof full-time	Total	Thereof full-time
AT	71.3	49.8	28	34.2	89.4	31
BE	66.7	38.9	51.7	65.5	97.8	85.6
BG	68.8	1.7	18.7	90.3	92	83.4
CY	69.9	12.3	28.8	72.9	83.2	53
CZ	72.1	9.4	4.9	16.3	62.6	57.5
DE	75.8	47.7	19.9	59.2	64.2	59.6
DK	75.5	30.4	69.1	88.2	91	90
EE	77.5	16.3	25.7	79.3	90.5	84.9
EL	52.7	12.4	32.3	51	83.4	50
ES	62.3	22	55.3	45.7	97.9	43.7
FI	75.8	21.3	42.1	80.7	92	76.7
FR	70.1	27.1	57.1	64.6	96.2	63.9
HR	62.9	5.9	33.3	96.9	63.7	81.4
HU	73.4	6.6	13.9	79.8	90.4	75.9
IE	69.9	27.5	16.6	50	84	11.1
IT	53.1	31.4	33.4	52.9	91.7	71.1
LT	76.6	7.4	21.4	89.2	84.6	90.7
LU	70.3	30.8	62	67.4	95.1	65.4
LV	72.9	9.9	31	94.5	86	96.6
MT	70.3	17.4	24	46.6	86	70.1
NL	77.5	62.9	74.2	10.6	96.7	31.8
PL	68.3	7.4	18.3	74.3	66.1	67.3
PT	73	8.8	50.4	98	85.5	97.4
RO	56.8	2.9	9.5	82.1	51.8	16
SE	77.9	28.1	55.8	70.2	98.4	72.7
SI	72.5	12.2	47.5	81.4	87.9	84.6
SK	70.3	4.5	4.8	100	86.8	88.3
EU27	67.6	28.3	36.2	58.2	83.4	61.8

Source: EUROSTAT database [last accessed 06/01/2023].

Note: Labour market indicators refer to women aged 20 to 64 and are based on the Labour Force Survey. Childcare indicators are based on EU-SILC. Childcare indicators for Slovakia refer to 2020. Part-time employment is self-defined and country specific. Formal childcare refers to care organised/controlled by a structure (public, private). Full-time childcare refers to 30+ hours per week.

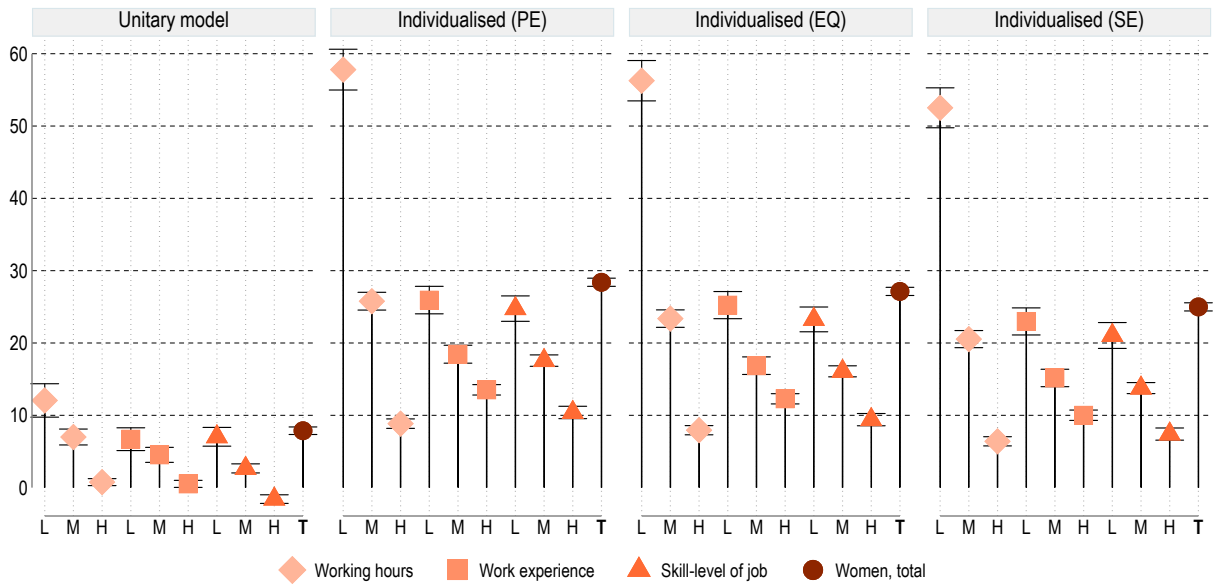
Figure A3.1: RWPG of women by economic status and sharing assumption



Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Sample restricted to women aged 25 to 55. Women’s probability of being at risk of poverty compared to the risk of male reference workers, controlling for personal and household characteristics and economic status, incl. country-fixed effects. "E" refers to employed, "S" to self-employed, "U" to unemployed, "I" to inactive and "T" to total.

Figure A3.2: RWPG of employed women by job characteristics and sharing assumption



Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Sample restricted to women aged 25 to 55. Employed women’s probability of being at risk of poverty compared to the risk of male reference workers, controlling for personal and household characteristics and economic status, incl. country-fixed effects. Results based on the interaction of the shown job characteristic with employed women. "L" refers to low, "M" to medium and "H" to high working hours, skill level or work experience and "T" to the average gap of women in total.

Table A3.2: Average marginal effects by income definition and sharing assumption - basic model without job characteristics

	Disposable income				Disposable income minus benefits				Disposable income plus taxes/SIC				Gross market incomes			
	U	PE	EQ	SE	U	PE	EQ	SE	U	PE	EQ	SE	U	PE	EQ	SE
Men	-0.004	-0.148***	-0.135***	-0.114***	-0.004	-0.129***	-0.129***	-0.129***	0.001	-0.127***	-0.115***	-0.098***	0.002	-0.108***	-0.108***	-0.108***
Age	-0.001***	-0.003***	-0.003***	-0.003***	-0.001**	-0.002**	-0.002**	-0.002**	-0.001***	-0.003**	-0.003**	-0.003**	-0.000*	-0.002***	-0.002***	-0.002***
Education (Ref.=Low)																
Middle educated	-0.074***	-0.047***	-0.052***	-0.053***	-0.101***	-0.076***	-0.076***	-0.076***	-0.057***	-0.043***	-0.047***	-0.043***	-0.090***	-0.070***	-0.070***	-0.070***
Highly educated	-0.138***	-0.113***	-0.116***	-0.116***	-0.209***	-0.162***	-0.162***	-0.162***	-0.096***	-0.096***	-0.096***	-0.091***	-0.164***	-0.141***	-0.141***	-0.141***
Non-citizen	0.092**	0.089***	0.095***	0.093***	0.097***	0.092***	0.092***	0.092***	0.064***	0.075***	0.084***	0.078***	0.081***	0.088***	0.088***	0.088***
With partner	0.012**	0.017***	0.022***	0.018***	-0.047***	0.010**	0.010**	0.010**	0.010**	0.016***	0.020***	0.016***	-0.028**	0.005	0.005	0.005
Household type (Ref.=1 adult)																
2 adults	-0.040***	0.014**	0.020***	0.017***	0.069***	0.016***	0.016***	0.016***	-0.035***	0.029***	0.033***	0.030***	0.027***	0.033***	0.033***	0.033***
Lone parent	0.037**	0.022**	0.030***	0.040***	0.094***	0.098***	0.098***	0.098***	0.021***	0.016*	0.021***	0.031***	0.044***	0.056***	0.056***	0.056***
2 adults, 1 child	-0.005	0.054**	0.054***	0.046***	0.087***	0.051***	0.051***	0.051***	-0.016**	0.058**	0.058**	0.050**	0.032***	0.055**	0.055**	0.055**
2 adults, 2 children	0.019**	0.099***	0.084***	0.071***	0.148***	0.093***	0.093***	0.093***	0.003	0.085**	0.085**	0.073**	0.067***	0.091***	0.091***	0.091***
2 adults, 3+ children	0.082**	0.136***	0.129***	0.098**	0.263**	0.163***	0.163**	0.163**	0.044**	0.132**	0.122**	0.096**	0.189***	0.146**	0.146**	0.146**
Other households	0.009	0.119***	0.126***	0.119***	0.311**	0.144**	0.144**	0.144**	-0.006	0.130**	0.133**	0.127***	0.175***	0.161**	0.161**	0.161**
Child 0-5 in household	-0.015***	-0.001	-0.008**	-0.016***	0.018***	0.018***	0.018***	0.018***	-0.005	-0.005	-0.011**	-0.011**	0.015***	0.017***	0.017***	0.017***
Number of earners	-0.098***	-0.064**	-0.073***	-0.072***	-0.212***	-0.096***	-0.096***	-0.096***	-0.082**	-0.065**	-0.072***	-0.070***	-0.167**	-0.098***	-0.098***	-0.098***
Economic status (Ref.=Inactive)																
Employee	-0.103***	-0.396***	-0.378***	-0.362***	-0.192***	-0.633***	-0.633***	-0.633***	-0.083**	-0.370***	-0.352***	-0.339***	-0.163***	-0.611***	-0.611***	-0.611***
Self-employed	0.048**	-0.161**	-0.137**	-0.128**	-0.055**	-0.394**	-0.394**	-0.393**	0.030**	-0.189**	-0.169**	-0.159**	-0.044**	-0.424**	-0.424**	-0.424**
Unemployed	0.084**	0.009	0.034**	0.033**	0.052**	-0.114**	-0.114**	-0.114**	0.077***	0.012	0.035**	0.033**	0.055**	-0.122**	-0.122**	-0.122**
BE	-0.042***	-0.076***	-0.074***	-0.059***	-0.027***	-0.041**	-0.041**	-0.041**	-0.026***	-0.062**	-0.058**	-0.042**	-0.009	-0.035***	-0.035***	-0.035***
BG	0.075**	0.009	0.015	0.031***	0.012	-0.004	-0.004	-0.004	0.060**	-0.007	-0.001	0.011	0.037**	-0.026**	-0.026**	-0.026**
CY	0.005	-0.003	0.001	0.013	-0.024**	-0.002	-0.002	-0.002	0.001	-0.006	-0.001	0.012	0.022**	-0.000	-0.000	-0.000
CZ	-0.041***	-0.054**	-0.045**	-0.031**	-0.085**	-0.064**	-0.064**	-0.064**	-0.047**	-0.058**	-0.049**	-0.037**	-0.049**	-0.064**	-0.064**	-0.064**
DE	0.025**	0.056**	0.058**	0.063**	-0.011	0.038**	0.038**	0.038**	-0.004	0.022**	0.025**	0.030**	-0.016*	0.008	0.008	0.008
DK	-0.025**	-0.056**	-0.061**	-0.050**	0.043**	0.002	0.002	0.002	-0.065**	-0.122**	-0.122**	-0.104**	0.001	-0.028**	-0.028**	-0.028**
EE	0.035**	0.024**	0.014	0.013	0.013	0.024**	0.024**	0.024**	0.048***	0.038***	0.023**	0.027**	0.068***	0.036**	0.036**	0.036**
EL	-0.026***	-0.033**	-0.025**	-0.025**	-0.074***	-0.055**	-0.055**	-0.055**	-0.038**	-0.034**	-0.027**	-0.013*	-0.048**	-0.055**	-0.055**	-0.055**
ES	0.047***	0.015	0.024**	0.046***	0.017*	0.007	0.007	0.007	0.041**	0.013	0.021**	0.042**	0.057***	0.010	0.010	0.010
FI	-0.053**	-0.092***	-0.098***	-0.087***	-0.003	-0.032**	-0.032**	-0.032**	-0.060**	-0.093**	-0.098**	-0.091**	-0.003	-0.042**	-0.042**	-0.042**
FR	-0.020**	-0.044**	-0.041**	-0.030**	-0.003	-0.005	-0.005	-0.005	-0.032**	-0.051**	-0.048**	-0.039**	0.002	-0.024**	-0.024**	-0.024**
HR	-0.001	-0.033**	-0.024**	-0.007	-0.067**	-0.062**	-0.062**	-0.064**	-0.000	-0.024**	-0.015*	-0.000	-0.024**	-0.049***	-0.048***	-0.048***
HU	0.136***	0.108***	0.124***	0.141***	0.075***	0.077***	0.077***	0.077***	0.073**	0.047***	0.055***	0.065***	0.051***	0.016	0.016	0.016
IE	-0.021*	-0.034**	-0.034**	-0.018*	-0.032**	-0.007	-0.007	-0.007	0.007	-0.026**	-0.026**	-0.010	0.033***	0.007	0.007	0.007
IT	0.003	-0.009	-0.001	0.019**	-0.047***	-0.031**	-0.031**	-0.031**	0.004	-0.010	-0.001	0.018**	0.022**	-0.032**	-0.032**	-0.032**
LT	0.078***	0.006	0.014	0.030**	0.071**	0.034**	0.034**	0.034**	0.019*	-0.016	-0.007	0.006	0.031**	-0.003	-0.003	-0.003
LU	-0.034**	-0.042**	-0.051**	-0.034**	-0.061**	-0.061**	-0.061**	-0.061**	-0.055**	-0.051**	-0.058**	-0.046**	-0.031**	-0.060**	-0.060**	-0.060**
LV	0.033**	-0.001	-0.008	0.008	-0.009	-0.016	-0.016	-0.016	0.015*	-0.005	-0.013	0.002	0.011	-0.028***	-0.028***	-0.028***
MT	-0.020*	-0.049***	-0.042**	-0.025**	-0.082***	-0.088**	-0.088**	-0.088**	-0.020**	-0.041**	-0.034**	-0.020*	-0.023**	-0.073***	-0.073***	-0.073***
NL	-0.016*	-0.029***	-0.018*	-0.003	-0.026**	-0.011	-0.011	-0.011	-0.061***	-0.047***	-0.046**	-0.034**	-0.021**	-0.011	-0.011	-0.011
PL	-0.001	-0.015**	-0.015**	-0.006	-0.003	-0.035**	-0.035**	-0.035**	-0.029**	-0.028**	-0.026**	-0.018**	-0.014*	-0.044**	-0.044**	-0.044**
PT	0.004	-0.034**	-0.026**	-0.013	-0.065**	-0.068**	-0.068**	-0.068**	0.001	-0.029**	-0.023*	-0.008	-0.020**	-0.058**	-0.058**	-0.058**
RO	0.050***	-0.013	-0.009	0.013	-0.022**	-0.050**	-0.050**	-0.050**	0.029***	0.006	0.011	0.032***	-0.028**	-0.027**	-0.027**	-0.027**
SE	0.005	-0.038**	-0.034**	-0.035**	0.009	0.005	0.005	0.005	-0.016*	-0.052**	-0.052**	-0.049**	0.004	-0.014	-0.014	-0.014
SI	0.007	-0.012	-0.003	0.008	0.039***	0.012	0.012	0.012	-0.037***	-0.027***	-0.021**	-0.012	-0.003	-0.014*	-0.014*	-0.014*
SK	-0.016*	-0.042**	-0.035**	-0.018*	-0.028**	-0.061***	-0.061***	-0.061***	-0.032**	-0.056**	-0.050**	-0.034**	-0.035***	-0.075***	-0.075***	-0.075***

Source: Own calculations based on EUROMOD I4.62.
 Note: Weighted results. Sample restricted to men and women aged 25 to 55. Including interaction term of all variables with gender.

Table A3.4: Average marginal effects by income definition and sharing assumption - model including interaction of employment with skill-level of job

	Disposable income				Disposable income minus benefits				Disposable income plus taxes/SIC				Gross market incomes			
	U	PE	EQ	SE	U	PE	EQ	SE	U	PE	EQ	SE	U	PE	EQ	SE
Men	0.013***	-0.097***	-0.086***	-0.067***	0.022**	-0.068***	-0.068***	-0.068***	0.014***	-0.084***	-0.074***	-0.059***	0.022**	-0.055***	-0.055***	-0.055***
Age	-0.001**	-0.003**	-0.003**	-0.003**	-0.000	-0.002**	-0.002**	-0.002**	-0.000**	-0.003**	-0.003**	-0.003**	-0.000	-0.002**	-0.002**	-0.002**
Education (Ref.=Low)																
Middle educated	-0.057***	-0.017***	-0.022***	-0.024***	-0.077***	-0.041***	-0.041***	-0.041***	-0.045***	-0.017***	-0.022***	-0.019***	-0.070***	-0.038***	-0.038***	-0.038***
Highly educated	-0.108***	-0.062***	-0.066***	-0.063***	-0.162***	-0.101***	-0.101***	-0.101***	-0.077***	-0.050***	-0.052***	-0.052***	-0.129***	-0.088***	-0.088***	-0.088***
Non-citizen	0.074***	0.054***	0.063***	0.063***	0.074***	0.060***	0.060***	0.060***	0.051***	0.050***	0.052***	0.052***	0.062***	0.056***	0.056***	0.056***
With partner	0.014***	0.013***	0.018***	0.015***	-0.043**	0.005	0.005	0.005	0.011***	0.012***	0.016***	0.013***	-0.024**	-0.001	-0.001	-0.001
Household type (Ref.=1 adult)																
2 adults	-0.044***	-0.017***	-0.010**	-0.010**	0.072***	-0.014**	-0.014**	-0.014**	-0.037***	0.002	0.008	0.006	0.024***	0.004	0.004	0.004
1 lone parent	0.034**	0.006	0.015	0.027**	0.092***	0.085***	0.085***	0.085***	0.019***	0.003	0.010	0.020*	0.044***	0.042***	0.042***	0.042***
2 adults, 1 child	-0.008	0.013*	0.033**	0.010	0.092***	0.010*	0.010*	0.010*	-0.018***	0.023**	0.025**	0.019***	0.071***	0.017***	0.017***	0.017***
2 adults, 2 children	0.016**	0.043***	0.029***	0.029***	0.153***	0.044**	0.044**	0.044**	0.002	0.046***	0.044**	0.037***	0.035***	0.046***	0.046***	0.046***
2 adults, 3+ children	0.071**	0.072**	0.067**	0.042**	0.257***	0.099***	0.099***	0.099***	0.037***	0.073**	0.069**	0.047***	0.162***	0.086**	0.086**	0.086**
Other households	0.003	0.035***	0.044**	0.044**	0.315**	0.057***	0.057***	0.057***	-0.010*	0.050**	0.057***	0.056***	0.177***	0.073**	0.073**	0.073**
Child 0-5 in household	-0.014***	0.002	-0.004	-0.012***	0.017***	0.017***	0.017***	0.017***	-0.005	0.005	-0.000	-0.006	0.015***	0.019***	0.019***	0.019***
Number of earners	-0.097***	-0.027***	-0.037**	-0.040**	-0.221***	-0.057***	-0.057***	-0.057***	-0.082***	-0.027***	-0.036**	-0.037***	-0.173**	-0.056**	-0.056**	-0.056**
Economic status (Ref.=Inactive)																
Employed, low-skilled	-0.053***	-0.130***	-0.123***	-0.130***	-0.170***	-0.309***	-0.309***	-0.308***	-0.051***	-0.116***	-0.106***	-0.116***	-0.146***	-0.274**	-0.274**	-0.273**
Employed, medium-skilled	-0.103***	-0.195***	-0.186***	-0.193**	-0.230**	-0.375**	-0.375**	-0.375**	-0.086**	-0.170**	-0.160**	-0.170**	-0.199**	-0.329**	-0.329**	-0.329**
Employed, high-skilled	-0.149***	-0.247***	-0.237***	-0.246**	-0.312**	-0.426***	-0.426***	-0.426***	-0.114***	-0.215***	-0.204***	-0.214***	-0.256**	-0.370**	-0.370**	-0.369**
Self-employed	0.039**	0.028**	0.043***	0.030**	-0.115***	-0.176***	-0.176***	-0.176***	0.022**	0.004	0.017*	0.006	-0.093***	-0.175***	-0.175***	-0.175***
Unemployed	0.082**	0.083**	0.104***	0.094***	0.022*	-0.036*	-0.036*	-0.036*	0.074**	0.080**	0.099**	0.090**	0.031**	-0.029*	-0.029*	-0.029*
Marginal	0.160**	0.164**	0.187***	0.204***	0.274**	-0.066**	-0.066**	-0.066**	0.132**	0.121**	0.128**	0.155**	0.232**	-0.106**	-0.107**	-0.106**
Substantial	0.087**	0.079**	-0.079**	-0.035**	0.159**	-0.339**	-0.339**	-0.338**	0.070**	-0.113**	-0.109**	-0.109**	0.129**	-0.378**	-0.378**	-0.378**
Full	0.009	-0.221**	-0.205**	-0.170**	0.050*	-0.511**	-0.511**	-0.511**	0.005	-0.219**	-0.208**	-0.173**	0.037**	-0.506**	-0.506**	-0.506**
Low work experience	0.014*	-0.018	-0.013	-0.010	0.057***	-0.306**	-0.306**	-0.302**	0.013**	-0.003	-0.003	0.003	0.043**	-0.313**	-0.313**	-0.309**
Medium work experience	0.007	0.062***	-0.061**	-0.051**	0.057***	-0.341**	-0.341**	-0.337**	0.008	-0.041**	-0.032**	-0.032**	0.034**	-0.344**	-0.344**	-0.340**
Almost always working	-0.034***	-0.117***	-0.114***	-0.110***	-0.004	-0.043**	-0.043**	-0.043**	-0.023**	-0.087**	-0.086**	-0.083**	-0.014*	-0.397**	-0.397**	-0.394**
BE	-0.046***	-0.078**	-0.076**	-0.064**	-0.029**	-0.046**	-0.046**	-0.046**	-0.029**	-0.065**	-0.065**	-0.049**	-0.012	-0.042**	-0.042**	-0.042**
BG	0.071**	0.026**	0.031**	0.043**	0.013	0.016*	0.016*	0.016*	0.058**	0.005	0.008	0.017*	0.037**	-0.013	-0.013	-0.013
CY	0.000	-0.002	0.001	0.009	-0.021*	-0.004	-0.004	-0.004	-0.003	-0.009	-0.007	-0.004	0.024**	-0.001	-0.001	-0.001
CZ	-0.033***	-0.025**	-0.016*	-0.006	-0.064**	-0.026**	-0.026**	-0.026**	-0.041**	-0.036**	-0.030**	-0.020**	-0.032**	-0.036**	-0.036**	-0.036**
DE	0.027**	0.052**	0.054**	0.057**	-0.005	0.034**	0.034**	0.034**	-0.002	0.017*	0.020**	0.025**	-0.011	0.003	0.003	0.003
DK	-0.021*	-0.028**	-0.035**	-0.028**	0.051**	0.028**	0.028**	0.028**	-0.064**	-0.100**	-0.103**	-0.089**	0.005	-0.006	-0.006	-0.006
EE	0.044**	0.053**	0.041**	0.036**	0.031**	0.059**	0.059**	0.059**	0.056**	0.061**	0.043**	0.044**	0.084**	0.063**	0.063**	0.063**
EL	-0.028**	-0.036**	-0.030**	-0.013*	-0.072**	-0.064**	-0.064**	-0.064**	-0.038**	-0.040**	-0.035**	-0.021**	-0.045**	-0.069**	-0.069**	-0.069**
ES	0.049**	0.037**	0.044**	0.062**	0.023*	0.031**	0.031**	0.031**	0.043**	0.031**	0.036**	0.055**	0.062**	0.029**	0.029**	0.029**
FI	-0.062***	-0.100***	-0.107***	-0.099***	-0.019*	-0.043**	-0.043**	-0.043**	-0.065**	-0.100**	-0.107**	-0.102**	-0.018*	-0.053**	-0.053**	-0.053**
FR	-0.019**	-0.029**	-0.029**	-0.020**	0.008	0.013	0.013	0.013	-0.032**	-0.040**	-0.039**	-0.033**	0.008	-0.011	-0.011	-0.011
HR	-0.001	-0.015**	-0.008	0.005	-0.057**	-0.040**	-0.040**	-0.043**	-0.001	-0.013	-0.007	0.005	-0.016*	-0.038**	-0.038**	-0.041**
HU	0.138***	0.131***	0.146***	0.160***	0.083**	0.104**	0.104**	0.104**	0.075**	0.063**	0.069**	0.077**	0.059**	0.035**	0.035**	0.035**
IE	-0.030**	-0.060**	-0.059**	-0.044**	-0.042	-0.044**	-0.044**	-0.044**	-0.015*	-0.051**	-0.051**	-0.036**	0.022*	-0.031**	-0.031**	-0.031**
IT	-0.005	-0.009	-0.002	-0.014*	-0.051**	-0.030**	-0.030**	-0.030**	-0.002	-0.010	-0.004	0.012*	-0.026**	-0.031**	-0.031**	-0.031**
LT	0.076***	0.022*	0.028**	0.039**	0.077**	0.059**	0.059**	0.059**	0.017	-0.007	-0.001	0.009	0.036**	0.013	0.013	0.013
LU	-0.028***	-0.030**	-0.040**	-0.025**	-0.044**	-0.045**	-0.045**	-0.045**	-0.053**	-0.045**	-0.045**	-0.044**	-0.017*	-0.052**	-0.052**	-0.052**
LV	0.038**	0.031**	0.033**	0.021*	0.042**	0.023*	0.023*	0.023*	0.018*	0.020*	0.009	0.021**	0.021*	0.002	0.002	0.002
MT	-0.011	-0.033**	-0.027**	-0.011	-0.061**	-0.066**	-0.066**	-0.066**	-0.013	-0.031**	-0.025**	-0.012	-0.006	-0.059**	-0.059**	-0.059**
NL	-0.024**	-0.053**	-0.043**	-0.029**	-0.031**	-0.040**	-0.040**	-0.040**	-0.065**	-0.066**	-0.065**	-0.053**	-0.027**	-0.037**	-0.037**	-0.037**
PL	-0.001	-0.006	-0.009	-0.003	0.005	-0.022**	-0.022**	-0.022**	-0.028**	-0.026**	-0.027**	-0.021**	-0.008	-0.041**	-0.041**	-0.041**
PT	0.018**	0.003	0.010	0.020**	-0.042**	-0.026**	-0.026**	-0.026**	0.012	-0.001	0.003	0.017*	0.001	-0.027**	-0.027**	-0.027**
RO	0.050**	0.003	0.003	0.023**	-0.011	-0.029**	-0.029**	-0.029**	0.030**	0.015*	0.015*	0.036**	-0.020**	-0.015*	-0.015*	-0.015*
SE	0.013	-0.009	-0.007	-0.011	0.027**	0.038**	0.038**	0.038**	-0.012	-0.028**	-0.030**	-0.030**	0.015	0.012	0.012	0.012
SI	0.012	0.008	0.015*	0.024**	0.055**	0.039**	0.039**	0.039**	-0.034**	-0.015*	-0.012	-0.004	0.010	0.002	0.002	0.002
SK	-0.008	-0.018*	-0.012	0.002	-0.005	-0.028**	-0.028**	-0.028**	-0.026**	-0.044**	-0.039**	-0.024**	-0.018*	-0.059**	-0.059**	-0.059**

Source and notes: see Table A3.2.

Table A3.5: Average marginal effects by income definition and sharing assumption - model including interaction of employment with work experience

	Disposable income				Disposable income minus benefits				Disposable income plus taxes/SIC				Gross market incomes			
	U	PE	EQ	SE	U	PE	EQ	SE	U	PE	EQ	SE	U	PE	EQ	SE
Men	0.011***	-0.101***	-0.099***	-0.071***	0.021***	-0.070***	-0.070***	-0.070***	0.012***	-0.088***	-0.078***	-0.062***	0.021***	-0.057***	-0.057***	-0.057***
Age	-0.001***	-0.003***	-0.003***	-0.003***	-0.000	-0.003***	-0.003***	-0.003***	-0.000***	-0.003***	-0.003***	-0.003***	-0.000	-0.002***	-0.002***	-0.002***
Education (Ref.=Low)	-0.052***	-0.015***	-0.019***	-0.021***	-0.143***	-0.036***	-0.036***	-0.036***	-0.041***	-0.015***	-0.019***	-0.017***	-0.065***	-0.034***	-0.034***	-0.034***
Middle educated	-0.094***	-0.048***	-0.052***	-0.055***	-0.071***	-0.083***	-0.083***	-0.083***	-0.066***	-0.041***	-0.041***	-0.041***	-0.115***	-0.072***	-0.072***	-0.072***
Highly educated	0.072***	0.054***	0.065***	0.064***	0.071***	0.057***	0.057***	0.057***	0.049***	0.049***	0.056***	0.052***	0.060***	0.054***	0.054***	0.054***
Non-citizen	0.013**	0.012***	0.017***	0.013***	-0.044***	0.004	0.004	0.004	0.010***	0.011***	0.015***	0.012***	-0.025***	-0.001	-0.001	-0.001
With partner	-0.043***	-0.016**	-0.008	-0.010	0.072***	-0.012**	-0.012**	-0.012**	-0.037***	0.003	0.009	0.007	0.023***	0.005	0.005	0.005
Household type (Ref.=1 adult)	0.034***	0.005	0.014	0.027**	0.091***	0.085***	0.085***	0.085***	0.020***	0.004	0.010	0.021**	0.044***	0.042***	0.042***	0.042***
2 adults	-0.007	0.015**	0.012	0.012	0.092***	0.012*	0.012*	0.012*	-0.017***	0.024**	0.026***	0.021***	0.035***	0.018***	0.018***	0.018***
2 adults, 1 child	0.016**	0.044***	0.038***	0.030***	0.153***	0.045***	0.045***	0.045***	0.002	0.047***	0.045***	0.037***	0.071***	0.046***	0.046***	0.046***
2 adults, 2 children	0.074**	0.074***	0.069***	0.045**	0.258***	0.100***	0.100***	0.100***	0.039***	0.077***	0.071**	0.050**	0.163***	0.086**	0.086**	0.086**
2 adults, 3+ children	0.003	0.037***	0.045***	0.045***	0.313***	0.058***	0.058***	0.058***	-0.009*	0.052**	0.059***	0.058***	0.175***	0.074**	0.074**	0.074**
Other households	-0.014***	0.001	-0.006	-0.014***	0.017***	0.017***	0.017***	0.017***	-0.005	0.004	-0.002	-0.008	0.014***	0.018***	0.018***	0.018***
Child 0-5 in household	-0.097***	-0.027**	-0.037**	-0.039***	-0.220***	-0.057***	-0.057***	-0.057***	-0.081***	-0.027**	-0.035***	-0.037***	-0.172***	-0.056***	-0.056***	-0.056***
Number of earners	-0.076***	-0.134***	-0.120***	-0.130***	-0.196***	-0.310***	-0.310***	-0.309***	-0.061***	-0.114**	-0.105***	-0.110***	-0.161***	-0.269***	-0.269***	-0.269***
Economic status (Ref.=Inactive)	-0.090**	-0.192***	-0.187**	-0.191**	-0.211**	-0.361**	-0.361**	-0.361**	-0.075**	-0.169**	-0.156***	-0.166**	-0.183**	-0.320**	-0.320**	-0.319**
Employed, low experience	-0.127**	-0.240***	-0.231**	-0.241**	-0.275**	-0.422***	-0.422***	-0.422***	-0.101***	-0.211***	-0.199***	-0.212***	-0.232**	-0.371***	-0.371***	-0.371***
Employed, medium experience	0.039**	0.018	0.034***	0.020*	-0.117***	-0.187***	-0.187***	-0.186***	0.023	0.064**	0.064**	0.074**	-0.096***	-0.186***	-0.186***	-0.186***
Employed, high experience	0.069**	0.065**	0.087***	0.076***	0.007	-0.055**	-0.055**	-0.055**	0.065**	0.064**	0.084**	0.074**	0.018*	-0.049***	-0.049***	-0.049***
Self-employed	0.157***	0.150***	0.173***	0.190***	0.263***	-0.092**	-0.091**	-0.091**	0.129**	0.106**	0.113***	0.141***	0.224**	-0.138***	-0.138***	-0.138***
Unemployed	0.082**	-0.097**	-0.085**	-0.053**	0.149**	-0.365**	-0.365**	-0.365**	0.066**	-0.133**	-0.120**	-0.088**	0.120**	-0.412***	-0.412***	-0.412***
Marginal	0.002	-0.241**	-0.226**	-0.190**	0.040**	-0.540**	-0.540**	-0.540**	0.000	-0.240**	-0.228**	-0.192**	0.028**	-0.543**	-0.543**	-0.543**
Substantial	0.050**	0.012	0.013	0.017*	0.119**	-0.034	-0.034	-0.034	0.037***	0.022*	0.022**	0.024**	0.086***	-0.025	-0.025	-0.025
Low-skilled job	0.005	-0.037**	-0.037**	-0.032**	0.059***	-0.098*	-0.098*	-0.098*	0.003	-0.019**	-0.022**	-0.017**	0.036***	-0.080*	-0.080*	-0.078*
Medium-skilled job	-0.050**	-0.093**	-0.092**	-0.086**	-0.023**	-0.159***	-0.159***	-0.158***	-0.033**	-0.067**	-0.064**	-0.040**	-0.023**	-0.130***	-0.130***	-0.128***
High-skilled job	-0.041***	-0.069**	-0.067**	-0.054**	-0.028**	-0.044**	-0.044**	-0.044**	-0.026**	-0.058**	-0.054**	-0.040**	-0.011	-0.039***	-0.039***	-0.039***
BE	0.073***	0.034**	0.039**	0.051**	0.012	0.019*	0.019*	0.019*	0.058**	0.010	0.013	0.023**	0.037***	-0.011	-0.011	-0.011
BG	0.004	0.006	0.008	0.018*	-0.021*	0.006	0.006	0.005	0.000	-0.003	-0.000	0.012	0.024**	0.000	0.000	0.000
CY	-0.030**	-0.018*	-0.010	-0.001	-0.065**	-0.024**	-0.024**	-0.024**	-0.039***	-0.031**	-0.025**	-0.015*	-0.033**	-0.034**	-0.034**	-0.034**
DE	0.030**	0.058**	0.060**	0.065***	-0.004	0.037**	0.037**	0.037**	0.001	0.022*	0.025**	0.031**	-0.011	0.006	0.006	0.006
DK	-0.015	-0.019	-0.026**	-0.019	0.054**	0.032***	0.032**	0.032**	-0.059**	-0.093**	-0.096**	-0.081**	0.009	-0.001	-0.001	-0.001
EE	0.050**	0.062**	0.050**	0.046**	0.034**	0.063**	0.063**	0.063**	0.061**	0.068**	0.051**	0.053**	0.087***	0.067***	0.067***	0.067***
EL	-0.026**	-0.031**	-0.024**	-0.007	-0.072**	-0.063**	-0.063**	-0.063**	-0.036**	-0.036**	-0.030**	-0.016**	0.045**	-0.067**	-0.067**	-0.067**
ES	0.051**	0.042**	0.049**	0.069**	0.022*	0.031**	0.031**	0.031**	0.045**	0.035**	0.040**	0.060**	0.061**	0.030**	0.030**	0.030**
FI	-0.052**	-0.079**	-0.085**	-0.078**	-0.014	-0.033**	-0.033**	-0.033**	-0.057**	-0.082**	-0.089**	-0.084**	-0.011	-0.043**	-0.043**	-0.043**
FR	-0.016*	-0.021**	-0.021**	-0.011	0.008	0.017*	0.017*	0.017*	-0.029**	-0.034**	-0.032**	-0.025**	0.009	-0.008	-0.008	-0.008
HR	0.005	0.001	0.006	0.020**	-0.054**	-0.029**	-0.029**	-0.032**	0.004	-0.001	0.004	0.018*	-0.014*	-0.027**	-0.027**	-0.027**
HU	0.142***	0.141***	0.156***	0.171***	0.083**	0.107***	0.107***	0.107***	0.079**	0.071**	0.077**	0.086**	0.060**	0.038**	0.038**	0.038**
IE	-0.029**	-0.055**	-0.054**	-0.038**	-0.044**	-0.044**	-0.044**	-0.044**	-0.014*	-0.048**	-0.047**	-0.031**	0.020*	-0.031**	-0.031**	-0.031**
IT	0.005	0.008	0.015*	0.015*	-0.044**	-0.020**	-0.020**	-0.020**	0.006	0.004	0.011	0.028**	0.020**	-0.022**	-0.022**	-0.022**
LT	0.079**	0.031**	0.036**	0.049**	0.076**	0.060**	0.060**	0.060**	0.020**	-0.000	0.006	0.018	0.036**	0.014	0.014	0.014
LU	-0.023**	-0.026**	-0.036**	-0.020*	-0.036**	-0.039**	-0.039**	-0.039**	-0.048**	-0.041**	-0.051**	-0.039**	-0.010	-0.046**	-0.046**	-0.046**
LV	0.041**	0.037**	0.028**	0.040**	0.005	0.024**	0.024**	0.024**	0.021**	0.025**	0.014	0.027**	0.022**	0.003	0.003	0.003
MT	-0.006	-0.024**	-0.017**	-0.001	-0.059**	-0.063**	-0.063**	-0.063**	-0.009	-0.024**	-0.017**	-0.003	-0.004	-0.055**	-0.055**	-0.055**
NL	-0.015*	-0.039**	-0.029**	-0.014*	-0.025**	-0.031**	-0.031**	-0.031**	-0.059**	-0.055**	-0.053**	-0.041**	-0.023**	-0.028**	-0.028**	-0.028**
PL	0.002	0.001	-0.001	0.006	0.002	-0.022**	-0.022**	-0.022**	-0.026**	-0.020**	-0.020**	-0.013*	-0.010	-0.041**	-0.041**	-0.041**
PT	0.022**	0.009	0.016*	0.027***	-0.040**	-0.023**	-0.023**	-0.023**	0.016*	0.004	0.008	0.023**	0.003	-0.023**	-0.023**	-0.023**
RO	0.049**	0.005	0.006	0.027***	-0.014	-0.031**	-0.031**	-0.031**	0.028**	0.016*	0.017*	0.038**	-0.023**	-0.017*	-0.017*	-0.017*
SE	0.016*	-0.003	-0.000	0.016**	0.028**	0.041**	0.041**	0.041**	-0.009	-0.023**	-0.025**	-0.025**	0.017*	0.016*	0.016*	0.016*
SI	0.018*	0.020**	0.023**	0.037***	0.057**	0.046**	0.046**	0.046**	-0.029**	-0.005	-0.002	0.007	0.013*	0.009	0.009	0.009
SK	-0.004	-0.012	-0.006	0.010	-0.006	-0.027**	-0.027**	-0.027**	-0.023**	-0.038**	-0.034**	-0.018*	-0.018*	-0.058**	-0.058**	-0.058**

Source and notes: see Table A3.2.

Table A3.6: RWPG and overall welfare impact by subgroups, income definition and sharing assumption

Scenario:	Unitary model			Primary earner			Equal sharing			Secondary earner								
	Gross market income	Disposable income	Total income tax/SIC benefits	Overall welfare impact	Gross market income	Disposable income	Total income tax/SIC benefits	Overall welfare impact	Gross market income	Disposable income	Total income tax/SIC benefits	Overall welfare impact						
By economic status																		
Employed	7.5	2.5	8.5	2.7	16.6	12.2	19.6	15.2	19.6	11.2	19.6	13.9	-2.7	16.6	9.7	19.6	12.0	-4.6
Self-employed	19.5	13.6	23.1	17.9	38.5	34.1	45.9	41.9	38.5	33.0	45.9	40.8	2.3	38.5	30.8	45.9	37.7	-0.8
Unemployed	24.5	15.5	28.3	18.7	64.5	50.6	68.9	54.6	64.5	49.7	68.9	53.8	-10.7	64.5	46.6	68.9	50.0	-14.5
Inactive	16.6	9.3	20.2	12.5	73.3	56.2	76.5	60.0	73.3	53.7	76.5	57.5	-15.8	73.3	50.2	76.4	53.5	-19.8
Employed women by working hours																		
20	21.7	10.3	23.9	12.1	59.4	50.0	68.3	57.8	59.4	47.3	68.3	56.3	-3.1	59.3	44.1	68.3	52.5	-6.8
20-34	13.3	5.4	15.0	7.0	26.1	18.7	33.5	25.8	26.1	16.7	33.5	23.4	-2.8	26.1	15.1	33.4	20.5	-5.6
35+	4.4	1.1	5.2	0.8	12.3	7.4	13.6	8.8	12.3	7.0	13.6	7.9	-4.3	12.2	5.4	13.6	6.4	-5.8
Employed women by work experience																		
Low	12.5	5.6	13.6	6.7	29.8	23.0	32.7	25.9	29.8	21.8	32.7	25.2	-4.6	29.8	20.6	32.7	23.0	-6.8
Medium	8.8	3.7	11.1	4.5	23.7	16.0	26.3	18.4	23.7	15.4	26.3	16.9	-6.9	23.7	13.2	26.3	15.2	-8.6
High	3.5	0.7	4.0	0.5	17.6	11.1	19.8	13.5	17.6	10.3	19.8	12.3	-5.4	17.6	8.1	19.8	10.0	-7.6
Employed women by skill-level of job																		
Low	11.7	5.5	14.7	7.0	27.4	20.8	31.5	24.8	27.4	20.0	31.5	23.3	-4.2	27.4	17.7	31.5	21.0	-6.4
Medium	6.5	2.0	8.1	2.7	21.1	14.8	23.9	17.6	21.1	13.7	23.9	16.1	-5.0	21.1	11.6	23.9	13.8	-7.3
High	1.0	-0.5	0.4	-1.6	15.5	8.7	16.9	10.4	15.5	8.1	16.9	9.4	-6.1	15.5	6.3	16.9	7.4	-8.1
Total	11.9	6.7	13.2	7.9	30.7	25.5	33.7	28.4	30.7	24.4	33.7	27.1	-3.6	30.7	22.7	33.7	25.0	-5.7

Source: Own calculations based on EUROMOD I4.62.

Note: Weighted results. Overall welfare impact refers to the difference in reference worker gap between disposable and gross market incomes.

Table A3.7: Female poverty rates compared to male reference worker's poverty rate by subgroups, income definition and sharing assumption

Scenario:	Unitary model			Primary earner			Equal sharing			Secondary earner						
	Gross market income	Disposable income	Excl. tax/SIC benefits	Gross market income	Disposable income	Excl. tax/SIC benefits	Gross market income	Disposable income	Excl. tax/SIC benefits	Gross market income	Disposable income	Excl. tax/SIC benefits				
By economic status																
Employed	15.6	6.3	23.8	9.7	20.9	15.3	26.2	19.8	20.9	14.5	26.2	18.7	20.9	13.0	26.2	17.1
Self-employed	27.6	17.3	38.3	24.9	42.8	37.1	52.5	46.5	42.8	36.2	52.5	45.6	42.8	34.1	52.5	42.8
Unemployed	32.6	19.3	43.5	25.7	68.8	53.6	75.5	59.2	68.8	52.9	75.5	58.6	68.8	50.0	75.5	55.1
Inactive	24.7	13.1	35.5	19.6	77.6	59.2	83.1	64.6	77.6	56.9	83.1	62.3	77.6	53.5	83.0	58.6
Employed women by working hours																
20	29.8	14.0	39.2	19.1	63.7	53.0	74.9	62.4	63.7	50.5	74.9	61.0	63.6	47.5	74.9	57.6
20-34	21.4	9.1	30.3	14.0	30.4	21.8	40.1	30.4	30.4	19.9	40.1	28.1	30.4	18.4	40.0	25.6
35+	12.5	4.8	20.5	7.8	16.5	10.4	20.2	13.5	16.5	10.2	20.2	12.7	16.5	8.8	20.2	11.5
Employed women by work experience																
Low	20.6	9.4	28.8	13.7	34.1	26.0	39.3	30.6	34.1	25.0	39.3	30.0	34.1	24.0	39.3	28.1
Medium	16.9	7.4	26.3	11.6	28.0	19.0	32.9	23.1	28.0	18.6	32.9	21.6	28.0	16.6	32.9	20.3
High	11.6	4.5	19.3	7.5	21.9	14.1	26.4	18.2	21.9	13.5	26.4	17.1	21.9	11.5	26.4	15.1
Employed women by skill-level of job																
Low	19.8	9.3	29.9	14.1	31.7	23.9	38.1	29.4	31.7	23.2	38.1	28.0	31.7	21.1	38.1	26.1
Medium	14.6	5.8	23.4	9.7	25.4	17.8	30.5	22.2	25.4	16.9	30.5	20.9	25.4	14.9	30.5	18.9
High	9.1	3.3	15.7	5.4	19.8	11.7	23.5	15.0	19.8	11.3	23.5	14.2	19.8	9.7	23.5	12.5
Total	20.0	10.5	28.4	14.9	35.0	28.5	40.3	33.0	35.0	27.7	40.3	31.9	35.0	26.1	40.3	30.1
Male RW	8.1	3.8	15.3	7.0	4.3	3.0	6.6	4.6	4.3	3.2	6.6	4.8	4.3	3.4	6.6	5.1

Source: Own calculations based on EUROMOD I4.62.
Note: Weighted results.